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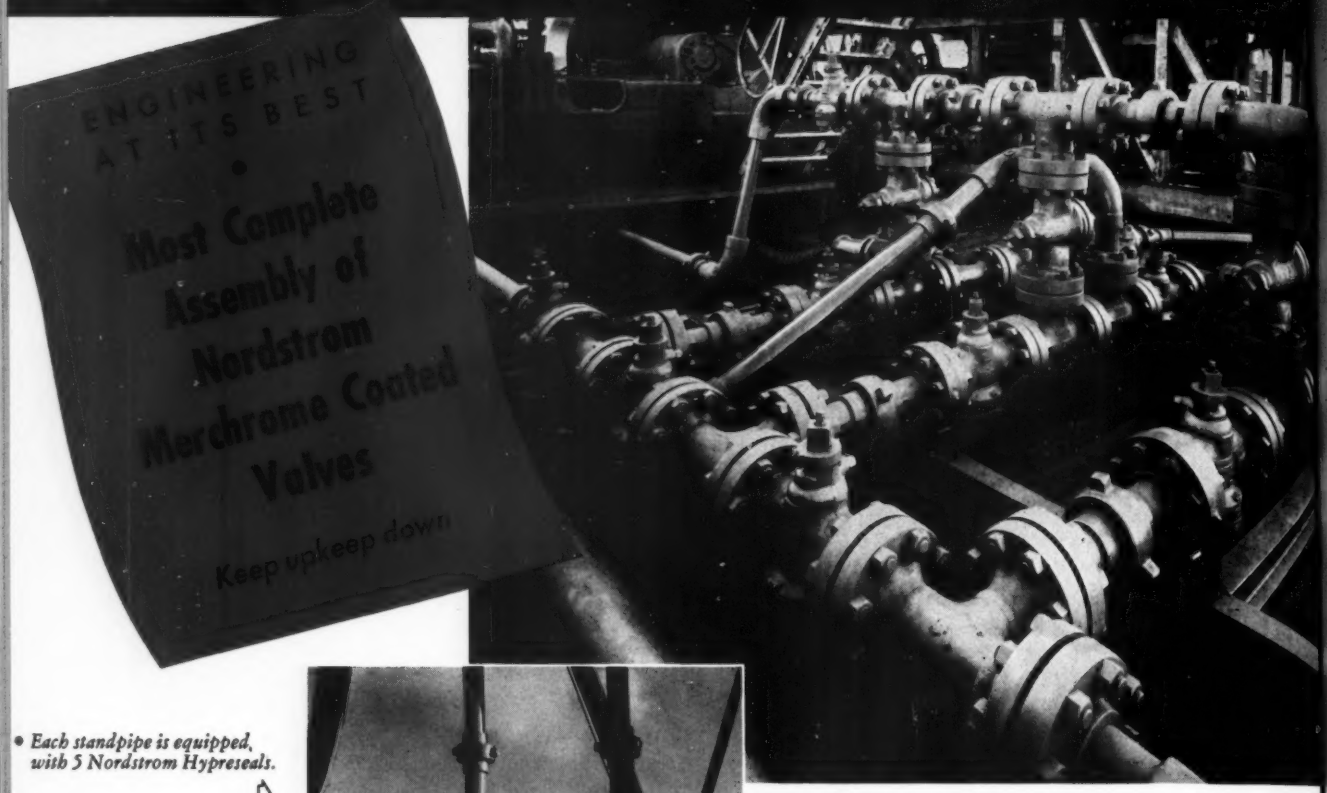
"TOPS" IN DRILLING RIGS *at Spindletop*



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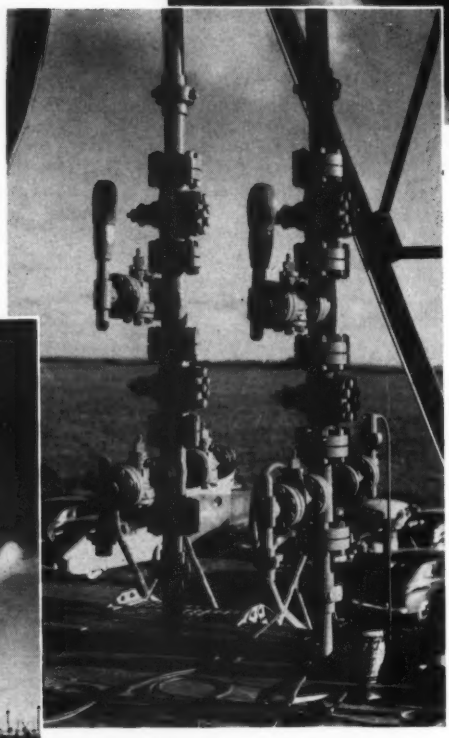

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Table of Contents

NEWS DEVELOPMENTS

Higher Prices Help Solve Shortages, Swensrud Says 62
W. E. Kuhn Elected to Head A.C.S. Petroleum Division 63
ERP Oil Purchases Will Be Scheduled Quarterly 63
High Construction Costs Cut Value of Expansion Program 64
Effects of Strike Minimized by Industry, Government Efforts 66
FCC Member Urges Radio Location Permits for Offshore Work 67
British Engineers Begin Work on Tanganyika Pipe Line 68
New Middle East Field Indicated in Southern Iran Test 69
Surface Pipe Cemented in Pakistan Wildcat 69
Equipment Availability Permits Development of Schoonebeek 70
Tapline Work Slowed by Lack of Pipe, Hull Says 72
Products Demand This Winter to Be Met, Boatwright Says 74

Editorial 61
This Week 65
International News 68
Watching Washington 73
Pipe-Line News 141
Natural-Gas News 145
Refining News 146
Statistics and Trends 176

ENGINEERING AND OPERATING

Nation's Largest Voluntary Unit Formed on Texas Gulf Coast 84
World's First Synthetic Glycerine Plant Opens at Houston 88
Insulation Requirements for Oil-Industry Motors 93
Book Reviews 96
Mene Grande Develops New Completion Technique 99
Why Supervisory Control Equipment? 109
Fundamentals of Pipe-Line Design—Part 3 127
Questions on Technology 133
Engineering Fundamentals—Decline of Productivity Index 135
The Refiner's Notebook—Handling Ammonia 137
Chart for Calculating Instantaneous Gas-Oil Ratios 139

EXPLORATION AND DRILLING

New Developments at Benedum in West Texas 155
Highlights of Week's Developments 155
Reports by Areas Start on Page 156
Weekly Well-Completion Record 176
Daily Average Production for Week 177

ADDITIONAL FEATURES

Personals 80
Deaths in the Industry 83
Drilling Contractors 149
Market Summary 178
Equipment Men in News 181
Classified Advertising 182
Events on Calendar 186
Advertisers' Index 186

WITH A

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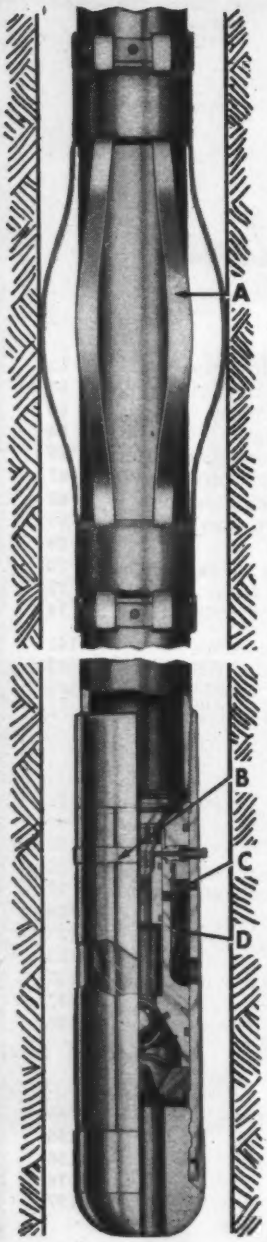

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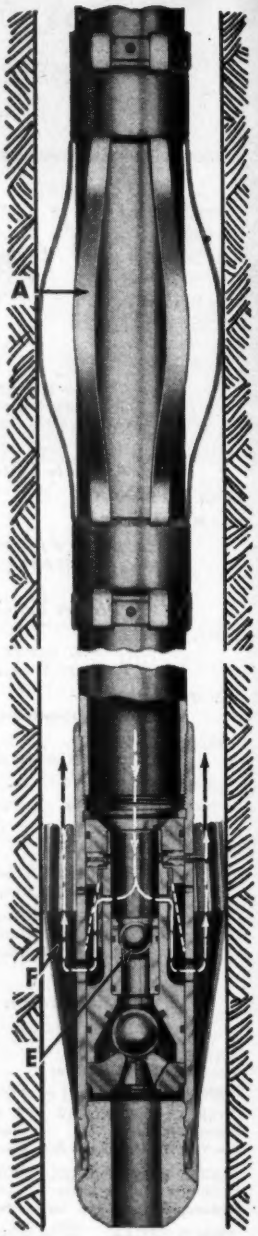

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THE OIL AND GAS JOURNAL

Whither?

CURRENT discussions among petroleum and automotive technologists regarding octane ratings in motor fuels and compression ratios in engines remind one of the hoary quip as to which came first—the egg or the chicken.

There are designers who claim that they led the way by increasing the compression ratios and thus their engine efficiencies, forcing refiners to enhance the octane ratings of their gasolines. Contrariwise, many refiners insist that they pioneered in better car performance by constantly adding to the quality of their fuels, and that manufacturers have never caught up with them so as to take full advantage of what they have to offer in gasolines.

Be this as it may, the records clearly reveal that both the antiknock ratings and compression ratios have improved steadily over the past two decades. This interdependent development unquestionably has played a major part in the amazing progress of both industries.

Most car manufacturers have indicated that they desire to make further increases in their engine compression ratios from the present average of about 6.5 to 1. At least one manufacturer has made successful tests using an engine with a compression ratio of 12.5 to 1, with claims of up to 40 per cent in economy with suitable fuels of 100 to 105-octane ratings.

The complaint of some petroleum technologists as aired at the St. Louis meeting of the American Chemical Society last week is that there is no actual saving in consumption, which they feel should be one of the end results of the better fuels. The automotive answer is that manufacturers are supplying the car owner with what he wants. They agree that trends in body design, greater weights, more horsepower, and increased speeds are not conducive to economy in the use of fuels.

So far as refiners are concerned, it would appear that there is every reason why they should continue to improve their processing practices, under the direction of expanded research and development departments. There are many accomplishments to point to in addition to motor-fuel qualities, including improvements in other products and plant efficiencies.

Admittedly there have not been savings in utilization of products comparable to the economies effective in production, refining, and the transportation of oil. The same situation applies to most other industries. Under our system up to now, the consumer can afford to be wasteful although the producer cannot.

In working independently and coordinating their efforts where desirable, the petroleum and automotive industries need not worry as to where they are going. They are steadily strengthening their positions on the sound basis of better performance of their products. The time may come when customers will feel impelled to translate this progress into more economic utilization of automotive power.

Higher Products Prices Help in Solving Shortages, Swensrud Says

ATLANTIC CITY.—Increased prices of petroleum products have made it possible for the oil industry to increase its output and solve the shortage problems, Sidney A. Swensrud, president of Gulf Oil Corp., declared in an address prepared for the annual meeting of the National Petroleum Association here September 15-17.

Swensrud's talk, which bore the general title of "Congressional Interest in the Oil Industry," was devoted largely to discussion of the current earnings reports of oil companies and these, he said, are modest in the light of prevailing conditions.

For many years before and during the war, he pointed out, the oil industry operated on a subnormal price level due to the low-cost oil reserves that were developed in a depression era and to the vast technological progress that was made in every branch of the industry. He asserted that oil price levels today are far below those that prevailed after World War I. As compared with other prices, using 1926 as a basis of comparison, petroleum crude and products prices now are only about 22 per cent above the 1926 level, whereas the average of all commodities is 66 per cent higher, he explained.

Costs Raised Prices

"I believe that the people in the oil industry are as keenly aware as anyone of the danger and disadvantages of inflation," declared the Gulf official. "The oil industry probably sells to as broad a cross section of the public as any industry and it dislikes the ill will which is bound to come from increased prices.

"More than this the oil industry is perhaps the largest customer for capital goods of any industry and it has been as much, if not more than any other industry, the victim of inflated construction costs. Were it not for such inflated costs it would not have been necessary to have as high prices for petroleum products as has been the case."

Increased prices, Swensrud admitted, have led to increased profits for most oil companies. "But," he continued, "these higher profit figures are subject to a great deal of qualification. In any business requiring extensive capital facilities, as does the oil industry, the charge against current earnings for the using up of capital facilities is a very important one. Cost can be looked at either as a certain apportioning of the actual cost of capital facilities over their useful life—in which case the charge against current earnings is based upon the original cost—or cost can be looked at as being what is necessary to replace the facilities as they are used up. In the latter case, it is necessary to base the charge on replacement costs which now average between two and three times the original cost.

"Any way one looks at it a large part of so-called 'profits' is only what is needed to replace the existing facilities and capital resources being used up. Profits must be thought of in terms of what they will buy, just as wage rates; and to mean anything in comparison with earlier levels they must be corrected by a cost-index."

Inflation's Effect

Swensrud pointed out that the cost-of-living index last year was 54 per cent above 1937 and construction costs for the same 10-year period rose approximately 215 per cent. Last year 17 of the larger oil companies reported profits of $1,109,000,000, of which $391,000,000 was paid in dividends, leaving a balance of $718,000,000. The dividends had buying power only of $252,000,000 spent in 1937, while the remaining $718,000,000, most of which was reinvested in capital facilities, would pay for only about the equivalent of construction costing $330,000,000 in 1937.

For the combined purposes which they had to serve therefore, he asserted, the 1947 profits of the oil companies had a 1937 purchasing power of only $582,000,000. The actual profits of that year for these same 17 oil companies were $544,000,000. During the 10-year interim, however, the investments of these companies in plants and facilities increased by more than 50 per cent. Therefore, he pointed out, the real profits last year were substantially below those of 1937.

"The concept of corporate profits as a source of new capital for expansion, improvements, and replacement of plant facilities is too often overlooked by the general public," he added. "However, if profits were not made it would be impossible to provide the country with ample oil products of the right quality to meet our full civilian and military needs."

Swensrud estimated that the capital expenditure requirements for the oil industry currently are running between $3,000,000,000 and $4,000,000,000 annually, and the 17 companies referred to had total capital expenditures last year of approximately $1,800,000,000. Even with their so-called high profits it was necessary for these companies to raise money by borrowing and through the sale of securities to the extent of $469,000,000.

Swensrud concluded by saying that the basic job of any industry is to provide high quality goods at low cost and in sufficient volume to take care of the requirements of the people; to treat its employes, its customers, and its stockholders with the utmost fairness and decency; and to keep open the door of opportunity so that freedom and enterprise may flourish. On all these counts, he asserted, the oil industry ranks extremely high.

The suggestion that the N.P.A. or some other group in the oil industry undertake to develop a uniform job-evaluation manual was made by Carl H. Swenson, supervisor of wages and salaries of Standard Oil Co. (N.J.), in a paper on "Reexamining the Wage and Salary Program."

"A sound compensation plan for our wage and salaried employes is essential if we are to have harmonious employe relations," Swenson said. "Such a plan must have definite and simple wage and salary structures. These structures must be based on at least the prevailing industry practices for similar work and must provide for adequate pensions, insurance, and related benefits. They must be defensible to management, the employes, unions, stockholders, and the public."

Job Evaluation Needed

The suggestion for a uniform system of job evaluation for the petroleum industry came as Swenson described the various methods now in use by various companies, particularly the point evaluation and factor comparison systems, both of which, he said, are rather complicated and lack uniformity among companies.

The objectives of a sound wage and salary program, he declared, are to establish levels of compensation that will permit hiring and keeping the right kind of employes. These wages and salaries must be in line with those paid for similar work in the industry and the community. They cannot be too high in relation to prevailing rates of pay or the company cannot stay in business, but if they are too low employes become dissatisfied and there is high labor turnover, which is expensive, he pointed out.

Since wages and salaries cannot be compared by job titles, Swenson said it is necessary for even a small company to write up job descriptions to provide a common understanding as to what are "like" or "similar" jobs, and he gave details of how this is done in his and other oil companies.

A current trend in industrial wages is payment of cost-of-living allowances, Swenson said, but this is not new to the oil industry as most com-

panies are paying this, in effect, in one form or another.

"Generally speaking," he said, "the oil industry has already granted its third round of wage increases. As of May 1948, wage increases per hour since October 1945 were as follows: all industry, 34½ cents; oil, 56 cents; steel, rubber, and autos, 33½ cents. Since May, steel and autos have made third-round increases of 13 cents and rubber of 11 cents per hour.

"The general pattern in the oil industry has been a total wage increase of 42½ cents per hour from January 1946 to date. A number of oil companies are paying part of this in the form of cost-of-living allowances. The cost of living has increased since January 1, 1946, using the January 1, 1946, figure of 129.9 as 100, to 171.7 as of June 15, or to 131.24 on the adjusted basis.

"The 42½-cent increase by the oil industry is approximately 131 per cent of the adjusted January 1, 1946, base. In other words, the oil industry's wages have kept pace with cost of living since January 1946."

Another recent trend discussed by Swenson is automatic salary progression under which pay is raised by a certain percentage after a definite term of service. The speaker declared that if an employe is good enough to keep he deserves the automatic increase, and if his supervisor does not recommend it the employe should be transferred or discharged.

Oil-company policy on general pay increases varies considerably, Swenson reported, some using a percentage, others a flat amount, and others a combination. He warned that continued granting of flat increases tends to narrow the differential between skilled and unskilled employes, and he also suggested that the automatic progression schedule be advanced whenever there is a general pay increase.

The current trend in profit sharing and bonus plans is to include all employes, such as under a thrift or retirement fund, Swenson said, and very few of the recently inaugurated plans are confined to managerial and supervisory employes.

W. E. Kuhn Elected to Head Petroleum Division of American Chemical Society

ST. LOUIS.—Dr. W. E. Kuhn, manager of the technical and research division of The Texas Co., New York City, was elected chairman of the Division of Petroleum Chemistry of the American Chemical Society at the final meeting of the division September 8. The division held sessions at which papers of special interest to petroleum technologists were presented as part of the 114th meeting of the A.C.S. (Midwest session) held here September 6-10.

Dr. Kuhn has been active in the work of the petroleum division for many years and is widely known within the research and operating phases of petroleum refining. He received his bachelor of science degree from Reed College and his doctor of philosophy degree from Cornell University. Following graduation in 1929 he immediately became associated with The Texas Co. and has served that organization in various capacities. He was for a time assistant chief chemist of the Port Arthur, Tex., refinery and later director of chemical engineering at that plant.

In 1937 Kuhn was transferred to the New York City headquarters as assistant director of research and the following year was appointed to his present position. He now has charge of the technical and research activities of one of the largest refining organizations of the petroleum industry.

A report on meeting of the petroleum chemistry division of the American Chemical Society was published in the September 9 issue, pages 50 and 51, of The Oil and Gas Journal, with abstracts of papers starting on page 83.

New officers of Division of Petroleum Chemistry, American Chemical Society: Dr. C. G. Kirkpride, vice president in charge of research and development, Houdry Process Co., secretary; Dr. A. A. O'Kelly, associate director of research, Socony-Vacuum Oil Co., Inc., vice chairman; Dr. W. E. Kuhn, manager of technical and research division, The Texas Co., chairman; Dr. Gustav Egloff, Universal Oil Products Co., retiring chairman; and Dr. B. H. Shoemaker, assistant director of research, Standard Oil Co. (Ind.), executive committee. Dr. L. V. Franklin, Gulf Refining Co., not shown in picture, is also a member of the executive committee

ERP Oil Purchases Will Be Scheduled Quarterly

WASHINGTON.—A new procedure for programming the purchase of oil and other commodities under the European Recovery Program will be made fully effective by the Economic Cooperation Administration toward the end of the year.

Under the new system, the quarterly dollar allotment to each country will be made known 4 months in advance, and each country will be required to submit its program for use of its allotment 90 days before the beginning of the quarter. So far as possible, the sum proposed to be spent on each commodity out of a given allotment will be broken down according to the calendar quarter within which it is estimated the goods in question will be delivered by the supplier to the receiving country. Following review of these programs, ECA will issue procurement authorizations specifying the country or area from which the various commodities are to be procured, the time period within which delivery must be promised, and the time period within which delivery must be made.

The effect of the new system will be to relieve ECA of the work of passing on each individual purchase while giving the Marshall-plan countries an opportunity to develop long-range procurement programs.

Under the plan, each country will be given an over-all allotment for petroleum, on the basis of which it will develop a procurement program covering crude, if needed, and the various products. Because of the fact that oil is procured in the Caribbean area and Middle East as well as the United States, ECA will indicate the areas from which each country is to draw its supplies.

High Construction Costs Pare Value of Huge Expansion Program

THIRTY major oil companies spent a total of $2,076,000,000 in 1947 for production, transportation, refining, and marketing facilities, the greatest outlay in history for expansion and improvement.

But, considering the postwar increase in construction costs, these companies got less for their money in 1947 than in 1937, when their capital expenditures totaled only $927,000,000.

They spent $1.19 per barrel for crude oil they ran to stills in 1947, compared with 82 cents a decade ago, but, considering the changed value of the dollar, the adjusted expenditure was only 48 cents in 1947, compared with 78 cents a decade ago.

Further, while their net income per barrel of crude oil processed apparently soared to a new high in 1947, the adjusted net increase was only 37 cents last year, compared with 48 in 1937.

Details of the financial operations of these 30 selected companies, together with data indicating the "actual" value of the transactions in the light of the fallen purchasing power of the dollar, are contained in the report, "Financial Analysis of Thirty Oil Companies for 1947," prepared by Joseph E. Pogue, vice president of the Chase National Bank, New York, and Frederick G. Coqueron, of the bank's petroleum department.

Costs Multiplied

The authors considered construction costs during the 1935-39 period as 100. By comparison, the figure in 1947 had risen to 247. On this basis, they figured, the expenditure of $2,076,000,000 was equal to a "normal" expenditure of only $840,000,000. While the 1947 outlay was 51 per cent greater than that of 1946, when the construction index stood at 186, the "normal" expenditure was only about 11 per cent greater.

Production facilities, as usual, accounted for slightly more than half of the total expenditures in 1947. For these facilities, the selected 30 companies spent $1,077,000,000 in 1947, or 51.9 per cent of the total outlay. Percentage-wise, the figure was a drop from 1946, when 59 per cent went for production facilities. It was down still further from the 1941-45 average of 59.8 per cent.

Marketing facilities also showed a slight drop percentage-wise, while both transportation and refining required a greater share of the total expenditure.

In 1937, when the index of construction costs was only slightly above normal—at 105—the "adjusted" value of $927,000,000 in capital investments was placed at $883,000,000, indicating that added construction costs that year absorbed $44,000,000 of the total spent. Last year, with the index at 247, the authors estimated the adjusted value of new facilities at $840,000,000, with the increase in construction costs absorbing $1,236,000,000, nearly two-thirds of the total amount spent.

Typical of the industry as a whole, the selected 30 companies increased both their production of crude oil and their runs to stills. The increases were noted both in domestic and foreign operations.

Industry Lauded

The report complimented the industry on its progress during the year, necessitated by "a remarkable rise in the demand for oil products," and expressed optimism over the future.

This demand increase, the authors said, "impelled the companies to approach capacity operations, exceeding those of the wartime peak; it stipulated an advance in petroleum prices, resulting in sharply increased gross and net income; and it accelerated the development of a vast expansion program, requiring unprecedented capital expenditures at inflated costs."

The fact that the industry made these huge capital expenditures, the report sand, enabled it "to bring about an approximate balance between supply and demand for petroleum products during 1947 and to prepare for a still better position in 1948."

The companies whose financial reports provided the basis for the study are:

Amerada Petroleum Corp., Atlantic Refining Co., Barnsdall Oil Co., Continental Oil Co., Gulf Oil Corp., Houston Oil Co. of Texas, Lion Oil Co., Louisiana Land & Exploration Co., Mid-Continent Petroleum Corp., Ohio Oil Co., Pacific Western Oil Corp., Phillips Petroleum Co., Plymouth Oil Co., Pure Oil Co., Richfield Oil Corp., Seaboard Oil Co. of Delaware, Shell Union Oil Corp., Sinclair Oil Corp., Skelly Oil Co., Socony-Vacuum Oil Co., Standard Oil Co. of California, Standard Oil Co. (Ind.), Standard Oil Co. (N.J.), Standard Oil Co. (Ohio), Sun Oil Co., The Texas Co., Texas Gulf Producing Co., Texas Pacific Coal & Oil Co., Tide Water Associated Oil Co., and Union Oil Co. of California.

TABLE 1—CAPITAL EXPENDITURES OF 30 MAJOR OIL COMPANIES

	1947		1946		Avg. 1941-1945	
	Millions of dollars	Per cent of total	Millions of dollars	Per cent of total	Millions of dollars	Per cent of total
Production	1,077	51.9	812	59.0	566	59.8
Transportation	297	14.3	157	11.4	120	12.7
Refining	402	19.4	201	14.6	192	20.3
Marketing	277	13.3	185	13.4	59	6.2
Others	23	1.1	22	1.6	9	1.0
Total	2,076	100.0	1,377	100.0	946	100.0

TABLE 2—CRUDE-OIL PRODUCTION
(Thousands of barrels daily)

	1947	1946	Average 1941-1945
United States	2,725	2,534	2,118
Foreign countries	700	645	419
Total	3,425	3,179	2,537

TABLE 3—CRUDE RUNS TO STILLS
(Thousands of barrels daily)

	1947	1946	Average 1941-1945
United States	4,165	3,873	3,319
Foreign countries	604	569	436
Total	4,769	4,442	3,775

TABLE 4—1947 CAPITAL EXPENDITURES COMPARED WITH PREWAR COSTS
(Millions of dollars)

Year	Construction costs in 50 cities	Actual capital expenditures	Adjusted to prewar costs	Amount absorbed by rising costs
1934	91	461	507	—46
1935	91	517	568	—51
1936	94	633	673	—40
1937	105	927	883	+44
1938	105	668	636	+32
1939	196	664	626	+38
1940	118	656	556	+100
1941	126	810	643	+167
1942	139	785	565	+220
1943	146	930	637	+293
1944	151	1,094	725	+369
1945	157	1,112	708	+404
1946	186	1,377	740	+637
1947	247	2,076	840	+1,236

this week

REFINING—Danciger Oil & Refining Co. sells Longview refinery and storage tanks and East Texas gathering system. . . . Company will engage solely in crude-oil production. . . . Refinery, closed for 3 years purchased by W. C. Berry of Tulsa. . . . ¶Gilcrease Oil Co. starts production at new 5,000-bbl. refinery near New Orleans. . . . ¶Pan American begins construction of extensive additions to Texas City research facilities. . . . ¶British American Oil Co. progresses with expansion of Montreal refinery.

NATURAL GAS—Federal Power Commission speeds procedure on applications for major new lines to serve Virginia, Maryland, and western New York. . . . Investigates allocation plan of Northern Natural in Iowa and Minnesota. . . . Proposes change in rate schedules for gas sales. . . .

PIPE LINES—Panhandle Eastern awards contracts for 43 miles of 26-in. loops. . . . Will let additional 155 miles next month. . . . New compressor stations in Kansas 25 per cent completed. . . . ¶Brazil plans 18-in. crude line from Santos 30 miles to site of projected refinery at Sao Paulo. . . . ¶Argentina plans 400-mile crude line from Plaza Huincul field to coast at Bahia Blanca. . . . ¶Preliminary work starts on 22-in. Ozark System to run 435 miles from Cushing to Wood River. . . .

TRENDS—For the twentieth time this year and the fourth consecutive week crude production set a new all-time record. . . . 5,542,185 bbl. daily during week ended September 11. . . . Up 17,185 bbl. daily over preceding week. . . . ¶Five states set new all-time production rates. . . . Colorado with 48,110 bbl. daily. . . . Indiana 25,100. . . . Louisiana 484,750 . . . Michigan 49,600. . . . Texas 2,470,900. . . . ¶Stocks of four major products continued their increase, gaining 3,932,000 bbl. during week ended September 4 to total 259,891,000 bbl. . . . This despite drop in refinery runs to 5,506,000 bbl. daily, lowest since first week in April. . . . ¶Drop in refinery runs due to various local causes. . . . Effects of California refinery strike not yet reflected in figures. . . .

INTERNATIONAL—Schoonebeek field in Holland now producing in excess of 7,600 bbl. daily. . . . Has 51 producing wells. . . . Development proceeding rapidly now that equipment is available. . . . Viscosity of crude requires special heating equipment. . . . ¶British engineers begin work on 6-in. products pipe line from East African Coast to supply Tanganyika 150 miles inland. . . . ¶Important new field believed discovered by Basrah Petroleum Co. in southern Iran close to Kuwait. . . . Burmah Oil Co. progressing with wildcat test in Pakistan. . . .

SUPPLY—California refinery strike threatens supplies on West Coast. . . . Government moves to minimize effects. . . . Los Angeles hardest hit. . . . Gasoline rationing forecast. . . . ¶Boatwright of Indiana Standard predicts oil industry will be able to meet all demands for petroleum products during coming winter. . . .

INFLATION—Expansion of oil industry is costing more than double 10 years ago but resulting in fewer new facilities. . . . Survey of 30 major companies dramatize effect of rising costs on industry's construction program. . . . ¶Swensrud of Gulf Oil Corp. says increase in products prices helped solve shortage problem. . . . Defends large earnings of oil companies as necessary to replace capital and facilities being used up. . . .

Leduc field's unruly well, Atlantic 3, bowed to months-long efforts to control it on September 9, shortly after this picture was made. Water flooding of the formation through the west relief hole finally killed the well, which had run wild since March 8. A spark of unknown origin ignited the well 2 days before it was brought under control and at the height of the fire, flames shot 400 to 800 ft. in the air. A long bank of smoke spread 100 miles across the Central Alberta plains. Production of the well during its career totaled 1,225,904 bbl., of which 945,943 was marketed and 240,730 returned to the formation through Atlantic 1 and 2. The picture was taken by Neil Miller, Dowell Incorporated

Effects of Oil Strike Minimized By Industry, Government Efforts

EFFORTS to minimize the effect of the California strike on the consuming public were prominent in the activities of both government and industry officials over the nation during the past week.

In California refineries not affected by the strike stepped up production from 250,000 to 450,000 bbl. of products daily. Prior to the strike, West Coast refineries were processing about 875,000 bbl. daily.

In Washington the Office of International Trade clamped an embargo effective September 11 on exports of gasoline, kerosine, gas oil, and distillate fuel from West Coast ports in a move to conserve rapidly dwindling supplies for residents of the area affected by the strike.

The OIT also requested Canada to suspend imports of products from the West Coast during the period of the strike.

Negotiations Continue

The Federal Mediation and Conciliation Service stepped into negotiations between the companies and the union, which called its workers off the job September 4, in a series of attempts to reach an agreement.

Defense officials began a serious study of the situation with a view to determining what action could be taken in the event the strike is prolonged to the point where it menaces supplies for the armed forces, but it was evident they were reluctant to put military personnel into the refineries to load tankers.

A. C. Stewart, Union Oil Co. of California, said the operating refineries will produce about 85,000 bbl. of gasoline daily, of which 25,000 will be required to meet essential transportation and agricultural needs and 60,000 will be available to the general public.

Stewart was named by National Petroleum Council Chairman Walter S. Hallanan to head the District 5 allocation advisory committee which will act under the recently adopted oil industry voluntary allocation agreement to attempt to minimize consumer hardships. Hallanan named M. H. Robineau, president of Frontier Refining Co., chairman of the District 4 committee.

In California Governor Warren appointed Robert P. O'Brien, state public utilities commission engineer, as oil coordinator for the duration of the strike. The appointment was made following an urgent appeal by Interior Secretary J. A. Krug to the governors of five western states asking that each appoint a coordinator and that each request consumers to forego all unnecessary use of products.

In his telegram to the governors of California, Arizona, Nevada, Oregon, and Washington, Krug declared that if refinery operations are not quickly restarted the West Coast will find itself in the midst of a crisis far more severe than that which developed in the East last winter.

Gasoline Sufficient

Most seriously affected was the sprawling city of Los Angeles, entirely dependent upon the local refineries and possessing inadequate mass transportation facilities. A telephone report to Washington by Stewart, however, expressed confidence that by keeping back filling station supplies there would be enough gasoline to keep essential services going indefinitely.

The White House was kept closely informed of developments in the situation by the Interior and Labor departments. Political considerations, however, were seen as a barrier to any immediate action by the Administration, either to seize the struck refineries or seek an 80-day injunction under the Taft-Hartley Act.

Officials in Washington were resigned to the possibility of a long-drawn-out fight. A long strike was indicated by the refusal of the companies to negotiate with the union as a unit. Also, the union was seen confident that President Truman, who is actively wooing the labor vote, would invoke neither seizure nor injunction powers, despite the anticipation that, if military supplies for Alaska and the Pacific were held up, defense officials would press for action.

Rationing Forecast

In announcing appointment of the two allocation-advisory committees, Hallanan said the West Coast had not been considered an area of possible oil shortage when the allocation agreement was adopted, but the cutting off of supplies because of the strike may necessitate the institution of allocations and rationing if the workers do not return to their jobs in the near future.

With respect to District 4, Hallanan said that while supplies in the Rocky Mountain area are believed to be adequate, the critical situation makes it advisable and necessary to be prepared should any emergencies arise in meeting consumer requirements.

Membership of the two committees includes:

District 4.—Charles Dodson, The Texas Co., Denver; Paul Hedges, National Congress of Gasoline Retailers, Salt Lake City; James Kessler, Diamond Gas & Fuel Co., Denver; L. L. Leabo, Bay Petroleum Corp., Denver; Joe Lentz, Continental Oil Co., Denver; Fred J. Meine, Sinclair Oil Co., Denver; Henry D. Moyle, Wasatch Oil Co., Salt Lake City; Burton W. Musser, Utah Oil Refining Co., Salt Lake City; Glenn E. Nielson, Husky Refining Co., Cody, Wyo.; R. S. Shannon, Pioneer Oil Corp., Denver; Branson Stevenson, Socony-Vacuum Oil Co., Inc., Great Falls, Mont.; H. A. Stewart, Rocky Mountain Oil and Gas Association, Casper, Wyo., C. M. Tuller, California Co., Denver; Ike Wescoat, Wescoat Oil Co., Boise, Idaho.

District 5.—E. J. McClanahan, Standard Oil Co. of California, San Francisco, vice chairman; P. [illegible], Ide Water Associated Oil Co., Los Angeles; Rush M. Blodget, Oil Producers Agency of California, Los Angeles; [illegible], California Stripper Well Association, Los Angeles; J. W. Hancock, Hancock Oil Co., Long Beach; C. A. [illegible], Independent Refinery Association of California, Inc., Los Angeles; Charles S. Jones, Richfield Oil Corp., Los Angeles; J. G. Jordan, Shell Oil Co., Inc., San Francisco; W. G. Kreiger, Douglas Oil Co. of California, Clearwater, Calif.; M. A. Machris, Bandini Petroleum Co., Los Angeles.

William C. McDuffie, Mohawk Petroleum Corp., San Francisco; Harry S. Rothschild, Rothschield, Inc., Santa Fe Springs, Calif.; J. C. Sample, General Petroleum Corp., Los Angeles; B. E. Devere, Pathfinder Petroleum Co., Los Angeles; Robert Harris, Champion Oil Co., Portland, Ore.; Gilbert D. Moyle, Inland Empire Refineries, Spokane; S. Fletcher, Fletcher Oil Co., Inc., Los Angeles; C. S. Wharton, The Texas Co., Los Angeles; Cecil True, True's Oil Co., Spokane; Earl McKales, McKales, Inc., Seattle; Stewart Hynes, San Francisco Garage Owners Association, San Francisco.

Phillips Subsidiary Buys Large Montana Holdings

West Edmond Oil Co., wholly owned subsidiary of Phillips Petroleum Co., has purchased 68 producing wells and 30,000 acres of leases in Montana from J. W. Johnson in a deal for all the stock of Consolidated Gas Co.

The wells, 58 oil wells and 10 gas wells, are on 30 leases totaling 3,800 acres in Kevin-Sunburst and Cut Bank fields. The properties constituted the largest individually owned oil holdings in the state.

The undeveloped acreage is in two large blocks, one of which lies directly west of Kevin-Sunburst.

Sun Makes High Offer In School Land Bidding

AUSTIN.—The Texas State Land Board has received bids totaling $180,777 on 14,563 acres of public school lands.

Sun Oil Co. submitted the highest bid received in an offer of $20,304 bonus on an 87-acre tract in Jefferson County. Surveyed tracts were offered in Hansford, Jefferson, Pecos, Presidio, Stonewall, Webb, Duval, Eastland, Jim Wells, Yoakum, and Howard counties.

FCC Member Urges Radio Location Permits for Offshore Oil Work

WASHINGTON.—Stressing the "immediate and urgent need" for development of new domestic oil resources, Federal Communications Commissioner George E. Sterling last week submitted a report on the applications of Seismograph Service Corp. and Frost Geophysical Corp., both of Tulsa, for experimental permits for construction of radio location systems for use in geophysical prospecting in the Gulf of Mexico, recommending that both applications be granted.

Sterling proposed that 1-year temporary licenses be granted to the companies, to permit a thorough testing of both systems during all seasons, in view of the vagaries of propagation, weather, and noise levels prevailing in the Gulf area.

Seismograph Service, using a Lorac system, which Sterling believes the most promising, would be authorized to construct a 500-watt station operating on frequencies of 2,005, 2,005.6, 2,045 and 2,046.25 kc. The company proposes to make Lorac available to other users, after the necessary tests have been completed, but has not yet disclosed the basis on which it will do this.

Frost Geophysical, using a system known as Raydist, which it does not propose to share with others but which the commissioner believes may be made available as a result of modifications which may be developed during the experimental period, would be authorized to erect a 50-watt station operating on frequencies of 2,006.8, 2,007.2, 29,720, 29,760, and 29,800 kc.

Gulf "Last Hope"

"The last great hope for new discoveries of petroleum in significant quantities lies in the Continental Shelf area beneath the Gulf of Mexico, particularly those portions off the coast of Texas and Louisiana," Sterling commented in his decision. "In these areas, present drilling and exploration practice provides for drilling operations approximately 2 years after the establishment of the presence of geological formations favorable to the accumulation of oil. Accordingly, the development of a radio service that may expedite the discovery of oil should be established at the earliest opportunity. Representatives of the oil industry have indicated their willingness to accept and use a radio location service whether it be made available on a privately owned, cooperatively owned, common-carrier, or government-furnished basis."

The commissioner cited several methods and instruments presently in use—the magnetometer, gravity meter, seismograph, and radio reflective apparatus—but pointed out that so far only the large domes and faults in the shelf area have been surveyed while with more precise methods of control the smaller formations can be charted and drilled.

The need for more precise information becomes more acute as drilling operations progress farther from the shore line, Sterling said. The Continental Shelf extends to a distance of approximately 100 miles from the Louisiana and Texas coasts and, in at least one area, 150 miles. Already oil has been produced from domes lying 10 to 12 miles off shore and approximately $25,000,000 has been paid in bonus money for the privilege of leasing the mineral rights to more than 2,500,000 acres of shelf land beneath the Gulf.

Equipment Described

The Lorac system to be used by Seismograph Service Corp. is essentially a phase-comparison device designed to measure distance by establishing the phase relationship between each of a pair of incoming radio-frequency signals. The basic system consists of four transmitters, four receivers and two phase-comparison meters. Two of the transmitters are installed at a central control location and one of the remaining transmitters with its associated receiver at each of the forward or advanced positions, located approximately 40 miles apart. Two receivers and the phase-indicating meters are installed in conjunction with a mobile unit, which receives the signals from the advance transmitters. The measurements are determined by a comparison of the phase of the signal from an advance station and a heterodyne obtained directly from the other central and outer transmitters. The cost of one Lorac system has been estimated at $60,000, with operating expenses of $8,000 per month.

The Raydist system to be used by Frost Geophysical Corp., while generally similar to Lorac in operation and based on phase-measuring techniques, employs a transmitter installed on a mobile unit whose position is to be indicated. Four frequencies are required, two to be used by the main shore station and the others by the survey craft and an auxiliary land station. As applied for, the system can accommodate only one user at a time, but it is anticipated that future modifications will permit joint use by approximately 12 mobile units.

Kansas Oil Allowable to Be Set at Commission Hearing

Kansas' October oil allowable will be set September 24 at a meeting of the Kansas Corporation Commission in the Allis Hotel, Wichita.

The commission also will hear evidence of Northern Natural Gas Co. and Republic Natural Gas Co. in connection with their request for reinstatement of cancelled underages on Hugoton field wells.

Next Week

THE JOURNAL'S ANNUAL PIPE-LINE NUMBER

While all branches of the industry have been establishing new records during the past 12 months, in a heroic effort to keep up with ever-increasing demand, no phase has had a more conspicuous advance than pipe-line transportation. Next week's issue will present the report of how these vital life lines have been expanding to assure that crude oil, natural gas, and products are in plentiful supply when and where needed.

More than a score of special articles have been prepared by top-flight engineers and pipe-line operators, as well as members of the Journal staff, relating the technological progress in transmission-line construction, not only in this country, but in other parts of the world as well. Several pages of tables will give a complete account of 1948's construction programs, and their current status.

Special attention has been accorded natural-gas transmission, which is now undergoing a phenomenal expansion in practically all parts of the country.

IN ADDITION—A four-color, 36 by 48-in. insert map will give locations of principal crude-oil and products lines, and petroleum refineries in the United States. This will be the most complete pipe line-refinery map ever published.

International

WORLD-WIDE OIL DEVELOPMENTS

British Engineers Begin Work on 150-Mile Tanganyika Pipe Line

TO provide transportation for gasoline and gas oil, from the East African Coast of Tanganyika to the southern area of the United Kingdom's Government Ground Nuts Area, British engineers are now laying a 150-mile, 6-in. pipe line through jungle and scrub country.

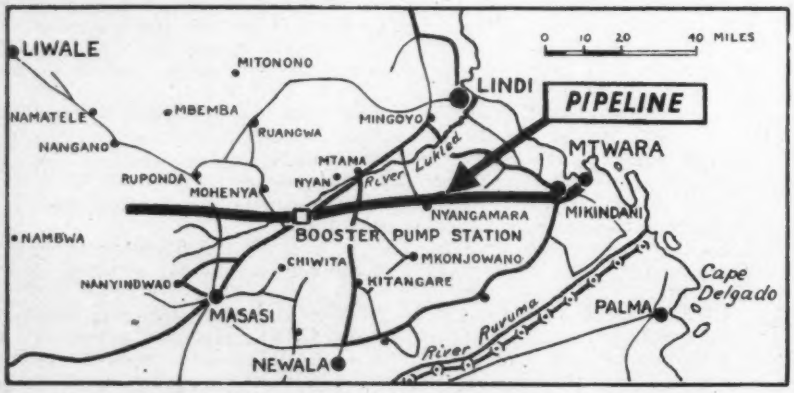
The line will cost approximately $2,000,000, and is expected to be ready for operation early in 1949. It will run from Mtwara, near Mikindani on the coast, and will carry an annual volume of between 120,000 and 180,000 tons, or from 1,400 to 3,400 bbl. daily to the inland depot. This fuel will be used largely for bulldozers, tractors and transportation vehicles, as well as for the agricultural machinery employed on cultivation operations.

Shell Petroleum Co. technicians, headed by J. M. Imrie, are supervising the pipe-line construction. Imrie, who has been in Shell's service for 22 years, has had considerable exeprience in all types of engineering construction in many parts of the world, including pioneering in remote South American areas. Early in September, 20 miles of the 150-mile line had been laid and 4 miles welded.

As new pipe in sufficient quantities was unobtainable, surplus military stocks left in India after the war were drawn upon. The pumping equipment also was obtained from the same source. Since the inland terminal is about 1,500 ft. above the level of the Mikindani port installation, a booster pump station will be built approximately half way along the line.

To save construction time, the route has been divided into sections and the work is proceeding simultaneously in each section. A port will also have to be built as there are no wharves, jetties, or other such facilities. All the pipe line equipment, as well as agricultural machinery and transportation vehicles, is being brought ashore in barges or tank landing craft. In view of the weight of the pipe alone, some 6,500 tons, the lack of port facilities adds greatly to the over-all difficulties.

Along the route of the line, hutted camps and mobile workshops are being built. Complete camp equipment with cooking facilities, refrigerators, lighting plants, sports gear, and medical supplies are being provided from the United Kingdom.



Map showing route of the 150-mile Tanganyika pipe line

No Solution Seen in Rumanian Oil Problem

Although the United States Government, along with four other nations, has formally protested the nationalization of private oil companies in Rumania, it appears that no satisfactory solution will be arrived at with the Communist-dominated Rumanian Government.

In Rumania's nationalization act, passed June 11, there is a provision whereby the Rumanian Government may audit a company's books, determine one or more contracts to be unprofitable, and state that the parent companies in other countries, in effect, owe money to their Rumanian subsidiaries.

With such a provision in the act, a well-informed source pointed out, there is "absolutely no chance of compensation from the confiscated oil companies."

The other countries which have protested to Rumania are France, Belgium, Great Britain and the Netherlands. Sweden and Switzerland are reported to have made recent protests on the same subject.

A dispatch from Prague, Czechoslovakia, states that the gasoline rationing measures put in effect there last month were due to Rumania's cutting off crude oil supplies. The oil deliveries have since been resumed, and it is expected that the restrictions will be lifted shortly. Penalties for disobeying rationing regulations included a year in prison.

Refinery in Iraq to Be Bought in United States

Iraq's Dr. Nadim Alpachachi, director general of economics, is scheduled to come to the United States late in September for the purpose of purchasing equipment for a complete oil refinery, according to a dispatch from Baghdad. The cost is expected to approximate $12,000,000.

While no figures were given out as to the capacity of the projected refinery, it was stated that the plant would be sufficiently large to supply all of Iraq's domestic needs.

Iraq may also enter into negotiations for a bitumen plant capable of turning out 800 bbl. daily.

New Middle East Field Indicated In Report on Southern Iran Test

International
WORLD-WIDE OIL DEVELOPMENTS

NEW YORK. — Reports from Basra in southern Iraq near the upper end of the Persian Gulf indicate that another field will be discovered in the Middle East.

The test, which is being drilled by the Basrah Petroleum Co., Ltd., is known as Zubair and according to latest information was coring limestone at 7,478 ft. Favorable oil shows were found at shallower depths. It is understood that the owners expect to continue drilling to the formations which account for the large production in the neighboring sheikdom of Kuwait in what is known as the Burghan field.

The test is 20 miles southwest of Basra, which is the largest city in that section of the Middle East. The same company is also drilling a test at Nar Umar, 20 miles northwest of Basra, and early this month was drilling in the limestone at 4,954 ft.

The Basrah company is an affiliate of Iraq Petroleum Co., Ltd., and is owned by the same British, Dutch, American, and French interests. The Iraq company has a large concession in northern Iraq where it owns Kirkuk field, one of the world's largest oil reserves. Since 1934 it has been connected by pipe line to Tripoli, Lebanon, and Haifa, Palestine, delivering approximately 90,000 bbl. daily. A 16-in. line to Haifa is nearing completion and a 16-in. line to Tripoli will be built.

The Basrah company has been carrying on exploration work on its concession in the lower part of Iraq for several years. Interest in the area increased when the Burghan field was discovered in Kuwait in the middle thirties.

The other production in the same general area is that of the Iraq Petroleum Co., Ltd., in southwest Iran, a distance of about 150 miles from Basra. The present concession of the Basra is for 75 years, starting in 1938.

Surface Pipe Cemented in Pakistan Wildcat; More Test Wells Planned

THE first stage of drilling operations at Lakhra, about 170 miles northeast of Karachi in Sind Province, Pakistan, has been completed with the cementing, at 1,926 ft., of a 16-in. steel casing by Burmah Oil Co., Ltd., according to a report from Karachi. Projected depth of this well is 10,000 ft.

Burmah Oil Co. also is drilling a well at Chakwal, West Punjab. This test and the one at Lakhra are being drilled with rotary equipment and by American and British crews.

It is proposed to drill wells also in Eastern Pakistan at Patharia, in territory which now forms a point of dispute between the governments of Pakistan and India, and at another location in the Sylhet or Chittagong districts of East Bengal.

Pakistan needs about 2,800,000 gal. of kerosine yearly and currently is producing only 5,000 gal.

The development of India's power alcohol resources is being urged in view of the growing need for petroleum products, particularly kerosine and gasoline.

The Punjab oil fields, which provided about 20 per cent of the dominion's total output before partition, are now incorporated in Pakistan and the oil fields of Assam are probably the only source of crude oil left in India, one source pointed out. However, surveys are being made in Dodhpur and certain other areas.

Meanwhile, in London Dr. F. Roland Gee, former member of the Geological Survey of India, urged intensive development of Pakistan's oil resources in a paper read in his absence to the International Geological Congress there.

In spite of disappointing results in the past, he said, "the possibilities of a greater measure of success in the future appear to be sufficiently attractive to justify the gamble of further enterprise." With the exception of Digboi and certain areas of northeastern Assam and of southern Assam near the Pakistan border, almost all the regions of the Indian subcontinent, based on available evidence, appear to offer prospects of oil, he said.

Gee explained that there are possible oil areas in the Himalayan foothills south of Kashmir; in the Potwar plateau and salt range and their continuation westwards across the Indus River in the northwest frontier province; in the Sulaiman range and its continuation southwards to Eastern Baluchistan, Kalat and Sind; and in the Mekran region of southwestern Kalat. The plains and the Indian River system adjoining these hill areas are also possible oil sources. There has been ample evidence of petroleum in Pakistan, both from oil seepages and from wells which have been operated commercially. Referring to the whole of Pakistan, Gee said:

"Pakistan has yet to develop oil fields of a size in any way comparable to those of the important producing countries of the world. Whether it is likely to prove successful in doing so is at present quite impossible to predict."

Egypt as Self-Sufficient Oil Nation Seen in 1950

Within 2 years Egypt may be able to produce all the crude oil and petroleum products which she requires for domestic consumption, and may even be able to export a part of the output, according to Dr. Mahmud Zeid, deputy director of the quarries and mines department in Egypt's Ministry of Commerce and Industry in Cairo.

The deputy director's forecast would appear to substantiate The Oil and Gas Journal's September 2 story (page 45) which stated that crude-oil production from recently discovered Sudr field is expected to climb to 40,000 bbl. daily by the end of this year. Currently, this field, located on the Sinai Peninsula, is producing around 7,400 bbl. daily. Total Egyptian production, as of early this month, was only 36,000 bbl. daily.

Philippine Firm Offers Government Partnership

Philippine Oil Development Co. has offered to make the Philippine Government a 25 per cent partner, in addition to paying royalties, according to a Reuters dispatch from Manila. This means that the Philippine Government would be given 25,000,000 shares of stock.

The company has applied to the Philippine Oil Commission for leases in Leyte and Panay as well as in Cebu.

Grant C. Corby, consulting geologist, stated that drilling operations at the Bondoc Peninsula in Quezon (Tavagas) province are progressing satisfactorily. *(For additional information on Philippine oil developments, see The Oil and Gas Journal, June 24, page 140, and June 10, page 55.)*

Equipment Availability Permits Rapid Development of Schoonebeek Field

DEVELOPMENT of Schoonebeek field, the only one in Holland, is proceeding rapidly now that adequate equipment has been obtained, and production currently is in excess of 7,600 bbl. per day.

Attaining this production involved numerous difficulties because the field is located under a peat bog which will not support heavy loads, so roads and well sites must be excavated and filled with sand and rubble. Also, the crude is very viscous and must be heated for handling above ground.

Schoonebeek was discovered during the war, but development was not undertaken until after The Netherlands was liberated and then was hampered by lack of equipment. At the end of 1944 there was only one producing well and only six more were drilled the following year. At present there are 51 producing wells, and drilling is continuing on a normal pattern.

The field lies in the northeastern part of Holland, close to the German border. The concession is held by

International
WORLD-WIDE OIL DEVELOPMENTS

Nederlandse Aardolie Maatschappij, a company owned jointly by the Royal Dutch-Shell group and Standard Oil Co. (N.J.), and managed by the former. As now outlined the known pool covers an area of approximately 2,500 acres, and the field is being drilled up on a 40-acre spacing grid.

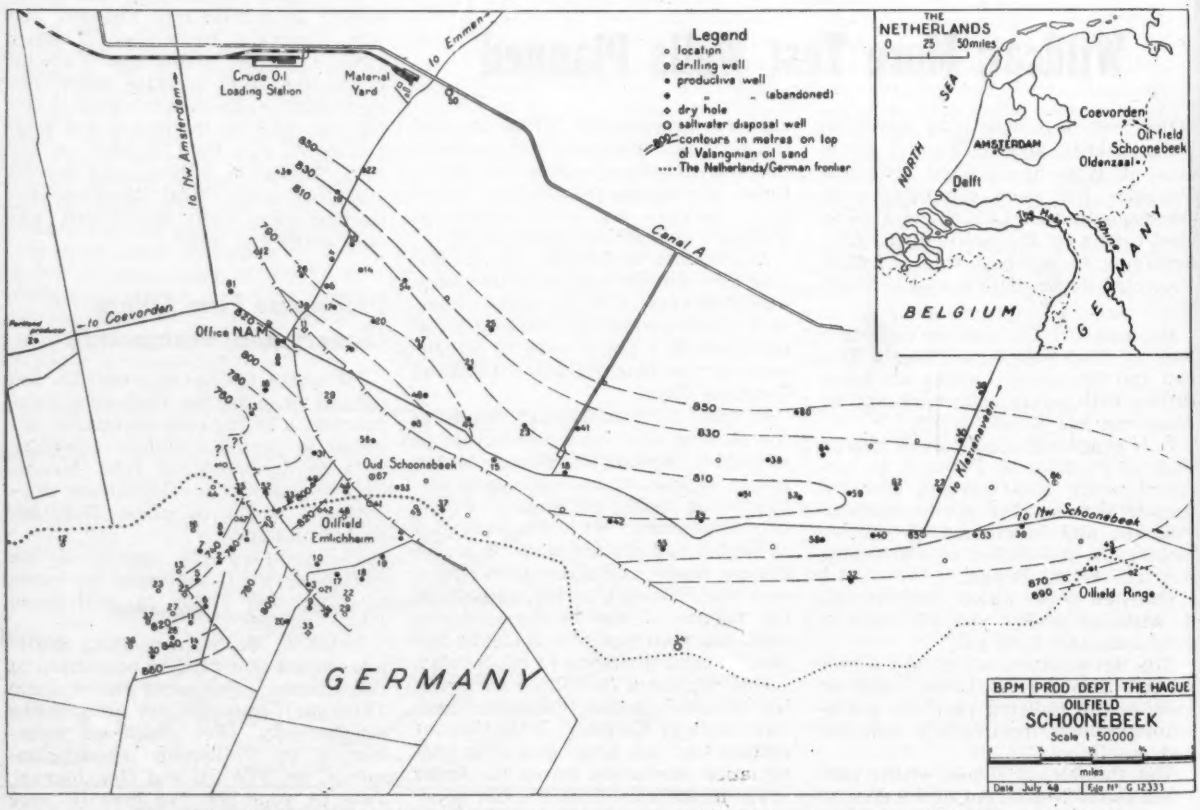
Production is obtained from a 100-ft. stratum of loose sand of lower Cretaceous Valanginian age at a depth of 2,500-2,650 ft. The crude is of 24.8° A.P.I. gravity and is very viscous owing to a high paraffin content and a low percentage of light constituents. Wax trouble frequently occurs, especially during winter, not only in the wells but also in the gathering lines and main pipe lines.

Due to the low gas-oil ratio—56 cu. ft. per barrel of oil—the flowing life of the wells is very short and the majority have to be pumped from the beginning. Individual electrically driven pumping units are used, with 2½ or 3-in. Axelson type pumps.

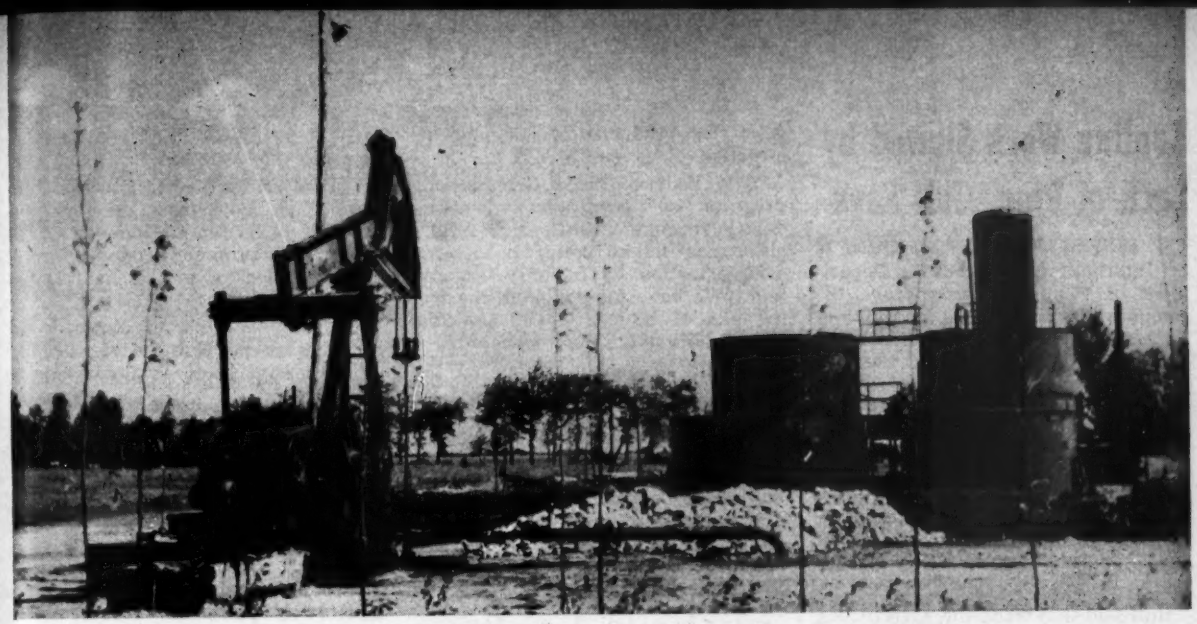
Flow lines are 3 or 4 in. in diameter depending on the distance to block stations which are at a maximum distance of 2,400 to 3,000 ft. from the wells. These lines are provided with inner tubes of 1 or 1½-in. diameter through which hot water or steam can be fed to keep the lines flowing.

At the block stations the crude is heated before being piped through 6-in. trunk lines to the railroad terminal. This main line is insulated and buried and is also equipped with an inner tube for heating purposes. All tanks are insulated and have heating coils. At the terminal the oil is again heated in the storage tanks and pumped through insulated lines to tank cars equipped with steam coils. The crude is shipped by rail to the Shell refinery near Rotterdam.

Due to the high pour point of the crude, wax settles out in the tubing



Map of Schoonebeek field, showing the location of all wells drilled and other important data



As gas pressure in the field is insufficient to lift the oil, pumps are used on all producing wells. Tanks in the background are measuring tanks of a block station. Tall tank is a gas trap. Because of the high viscosity of the oil, it must be heated before being pumped through the pipe lines. Trees have been planted to screen the installation and preserve the rural character of the landscape

International
WORLD-WIDE OIL DEVELOPMENTS

of the wells and on the rods often to a depth of 1,500 ft. Consequently pulling and steaming jobs have to be done at frequent intervals.

The accompanying table shows the growth in development of Schoonebeek field.

	Annual production in bbl.	Average bbl. per day	No. of producing wells
1943	1,457	4	1
1944	12,244	33	1
1945	40,585	111	7
1946	435,144	1,192	22
1947	1,478,229	4,050	38
First half 1948	1,392,382	7,650	51

The water produced with oil in the edge wells is very salty, having 110 to 140 grams of total solids per liter, and an installation is being built for electrical dehydration and desalting.

Drilling in Schoonebeek does not present any particular difficulties. It is conducted with modern diesel-powered unitized Ideal type 50 rigs equipped with 95-ft. Lee C. Moore jack-knife cantilever masts. Wells are completed with liners having 0.02-in. slots. Schlumberger logging is used for correlation purposes.

Crude oil is pumped from the block station near the well head to the crude loading station, where it is placed in storage tanks. From here it is shipped by tank car to the Pernis refinery. Loading rack is visible at the extreme right

Production in Iran Again Sets Record

Another all-time high was reached in Iran during July when Anglo-Iranian Oil Co., Ltd., produced a total of 2,283,000 tons, or approximately 552,300 bbl. daily. This compares with the June output of 2,041,000 tons, or about 510,200 bbl. daily. Iran's previous high was recorded in May when production totaled 2,228,000 tons or 539,000 bbl. daily.

Total 1948 production in Iran, up to July 31, climbed to 13,759,000 tons, or about 486,700 bbl. daily. This compares with 11,309,000 tons, or about 410,700 bbl. daily for the same period in 1947.

Study Being Made of Po River Mouth Area

A party of French geophysicists is visiting the rich methane gas area at the mouth of Italy's River Po to determine the probabilities of petroleum in that area, according to a dispatch from Milan.

Meanwhile, work is scheduled to start shortly on the construction of a new pipe line to carry methane from Contarina to Porto Marghera.

Tapline Work Slowed by Lack of Pipe, Hull Says

ST. LOUIS.—Failure of the Office of International Trade of the Department of Commerce to approve the company's export license for pipe has slowed up the laying of the 1,100-mile, 30-31-in. pipe line from the Persian Gulf in Arabia to Sidon, Lebanon, on the eastern Mediterranean, Burt E. Hull, president of Trans-Arabian Pipe Line Co. explained here September 8 at the dinner meeting of the Division of Petroleum Chemistry of the American Chemical Society. The petroleum division held meetings here during 3 days of the annual meeting of the A.C.S. (Midwest session).

Hull said that when the government agency did not approve the export shipment of the pipe for the second quarter of this year it was necessary for his company to curtail its pipe-laying program on which 238 miles of pipe has been delivered. Hull, in a detailed description of the pipe-line project to 200 petroleum chemists, explained that it cost approximately $5,000 per person to send American personnel to and from Saudi Arabia. The failure to receive export licenses has made it necessary for the company to return to the United States a sizable number of its personnel no longer needed when pipe shipments ended. The government this month will act on a request for a resumption of the pipe deliveries.

Hull stressed the economic phases of the project in relation to world oil supplies including shipments to the United States. An article by Hull and one by Bechtel Corp., which is in charge of laying the line, will be features of the Annual Pipe Line Number of The Oil and Gas Journal to be published September 23.

Basing Point Case Dooms Competition, Mason Says

The recent Supreme Court decision in the Cement Institute case prohibiting a manufacturer from absorbing freight charges will cause great migration of industry, local monopolies, higher prices, and confusion in all lines of trade, R. O. Mason, attorney for Cities Service Oil Co., told the Northeast Oklahoma Oil Producers Association at a meeting in Bartlesville September 11.

Unless the law is amended by Congress, Mason said, all materials will have to be sold f.o.b. point of production, and he predicted that this would lead to such conditions as removal of many cement and other plants from the cheap-fuel areas of the Southwest, stagnation of industrial development in regions remote from steel-producing centers, and destruction of competition.

"The Federal Trade Commission's program for decentralization of industry through abolition of freight absorption might better be labeled disorganization of industry," Mason said. "We have jumped from the frying pan of trade restraint into the fire of almost absolute monopoly.

"Freight absorption is one of the traditional methods of contesting for business in every industry. Unless the law is amended, sooner or later every industry will eventually be divided into zones of monopoly."

Platform Destroyed By Gulf Hurricane

NEW ORLEANS.—Last week's Gulf of Mexico hurricane resulted in the complete destruction of one offshore drilling platform and heavy damage to another. Otherwise, most offshore and coastal oil operations were back to normal within a few days.

The heavy damage was done to two Humble Oil & Refining Co. installations. A temporary small platform and derrick on Humble's 2 Caminada Pass, state lease 803, erected to drill a shallow test, was completely destroyed. The company's 2 Grand Isle, state lease 797, another temporary platform not constructed to withstand excessive wind and waves, was badly damaged. Total damage to the two installations is estimated at $500,000.

During the storm, 22-ft. waves and winds in excess of 75 m.p.h. were reported. Hundreds of men from locations as far as 29 miles from land were evacuated before the storm struck.

Sun Seeks Permit for Gulf Exploratory Work

NEW ORLEANS.—Sun Oil Co. applied for a Department of the Army permit for temporary installations in connection with seismograph operations in the Gulf of Mexico off Grand Isle, La.

Operations are to be conducted in an area about 48 miles long, easterly and westerly, extending approximately 30 miles channelward from the shore line. The area is central to a point about 40 miles southwesterly from Grand Isle in Lafourche and Terrebonne parishes.

Oil Heating Industry Is Warned Against Deception

WASHINGTON. — Heating equipment dealers who sell oil-burning furnaces on representations that plenty of oil will be available this winter may find themselves on the wrong end of a Federal Trade Commission action if they can't make good on this promises.

This was indicated last week when the FTC called a trade practice conference in Boston September 30 to consider a proposed code of trade practice rules for the oil heating industry.

A commission list of unfair trade practices to be banned was headed by "deception as to available supply of oil."

Ickes Says America Depleting Resources

WASHINGTON.—"Miserly" Russia may have the world by the tail if free-spending America continues to deplete its petroleum resources, it was warned last week by wartime oil czar Harold L. Ickes.

Criticizing "oil industry propaganda" which he declared extolled "the job that we are doing in this country in getting rid of our oil as rapidly as we can, as against, let us say, the Soviet Union, which is miserly with its oil," Ickes raised the bugaboo of what might happen to the United States "in the event that we should run through with our oil, while Russia would be holding on to much of what it originally possessed."

The former petroleum administrator and secretary of the interior repeated charges with which the industry became familiar before and during the war years—that, as compared with some others, the oil industry as a whole pays less than its equitable share of taxes, "not only for the public properties on which it thrives, but for the protection and factors of government"; and that it enjoys material advantages from the allowance for depletion.

Ickes again contended that it would be sound national policy to "bring in cheaper oil from the outside, while it is still available, while saving some of our own against some such trifling emergency as a future world war might constitute."

Humble Converting Three LST's Into Drilling Barges

HOUSTON.—Humble Oil & Refining Co. has awarded contract to Gulf Shipbuilding Corp., Mobile, Ala., for the conversion of three wartime LST's to drilling barges for use in offshore operations in the Gulf of Mexico.

Humble already has two such barges in operation in the Gulf and three others are being converted at Avondale Marine Ways, Inc., in their Harvey, La., yard. A total of 19 LST's have been purchased by Humble as war surplus. Those not being converted or in use are being stored at Orange, Tex.

WASHINGTON WATCHING

BY BERTRAM F. LINZ

They'll Keep Leaving

WASHINGTON.—It is not too early for oil and other companies to give consideration to the changes in employment policies which will be necessitated by the drafting of the young men on whom they depend to fill "bottom of the ladder" jobs.

The new Selective Service Act is only a temporary measure, but there is no expectation in Washington circles that compulsory military training will be dropped upon its expiration. Rather, the present measure is seen as an experiment, on the experience with which will be erected a more permanent conscription law which may stay on the books for many years.

Accordingly, the labor difficulties which employers will encounter next year, when the draft reaches into the ranks of the 19 and 20-year-olds, will be, not merely temporary discomforts, but a permanent condition in which consideration will have to be given to factors not heretore encountered in peacetime.

One of the problems will be the reinstatement of exservice men desiring to return to preservice jobs filled during their absence by nonservice workers, of little consequence in a time when there are more jobs than workers but serious when there may be more workers than jobs. Other questions, such as wages, also may be raised.

Back of the suggestion that selective service will be continued is the program to make the nation militarily strong enough to influence other countries to respect our desire for peace, and the impossibility of achieving that end through any system depending upon voluntary enlistments. The present program, naturally, is based upon existing international conditions, but it will be changed only if it becomes certain that all threat of war has been dissipated.

Oil Savers

USE of diesel locomotives by the railroads will not increase and may actually decrease the over-all consumption of oil fuel, according to operating officials.

Their contention is borne out by figures on railway consumption of oil which show that in 1945 the roads used a total of 106,718,000 bbl. on oil-burning steam locomotives and 3,722,000 bbl. in diesel engines, while in 1947 the consumption by steam locomotives had fallen to 89,782,000 bbl. and consumption of diesel oil increased to 17,456,000 bbl. Part of the 3,000,000-bbl. decline in over-all consumption may be due to changes in operating conditions, but officials say the greater part reflected the increased economy of the diesel engine over the steam locomotive.

It is estimated that about 30,000,000 bbl. of oil may be used in diesels this year, but it is anticipated that consumption in oil-burning steam locomotives will decline further in 1948 and progressively thereafter, as is now the trend.

The expansion of use of diesel locomotives on roads formerly using oil in steam engines is expected to bring a gradual decline in the number of steam locomotives in operation, officials say, and it is reasonably possible that consumption of fuel oil in both types of locomotives will be no greater in total volume in the foreseeable future than it was in 1945 and 1947, and it may conceivably be less.

As of July 1, last, the Class I railroads had 1,695 locomotives on order, practically all diesels, but they owned only 39,534 and delivery of all on order would give them only a few more than the 42,007 they had on July 1, 1946.

Oil Policy—Future

STATE Department policy makers are putting the finishing touches to their draft of a proposed international oil policy, but it will be some months before any pronouncement is made.

While the policy now is little more than a review and restatement of department thinking on the question of international oil to which little objection can be raised, representatives of other agencies who are sitting in on the deliberations have expressed little enthusiasm for it.

No decision appears to have been reached as to how the policy is to be made official, whether by submission to Congress as the department's recommendation if and when the matter is taken up at the Capitol or, as has been suggested, by an executive order issued by the President.

As a matter of fact, there may quite possibly be a new President in the White House before the policy statement is finally approved, in which event it will be subjected to thorough review.

One of the problems which must be settled is that of Latin American oil. Any policy pronounced undoubtedly will consider South America as a source of oil which should be expanded. The nationalistic laws of many of the countries, however, stand as a barrier to any large-scale development and, to be effective, the policy statement would have to call for greater cooperation between those countries and the United States. Washington is ready at any time to tender that cooperation, but efforts in the past to secure a relaxation of restrictive laws have been ineffective.

Dead Oil Duck

REGARDLESS of the outcome of the presidential elections, observers in Washington see no chance whatever of revival of the long-pending Anglo-American oil agreement, originally negotiated in 1944 as the first step toward a multilateral agreement on the conduct of the international petroleum trade in which all countries, consuming as well as producing, would participate.

The 1944 draft, which was submitted to the Senate for ratification by President Roosevelt, aroused such a storm of protest from the domestic industry that it was withdrawn and negotiations were reopened. A revised agreement was worked out which was sent to the Senate by President Truman in November 1945. Eighteen months later, the Senate Foreign Relations Committee found it in a pigeonhole and dusted it off for hearings, and on July 7, 1947, reported that, with certain reservations and amendments which it had worked out, the agreement could properly be ratified. With the more important problems of foreign aid and European recovery coming up, the oil agreement was quietly put to sleep.

Since the idea of a world oil agreement was broached there have been changes in the international situation which make it impracticable, such as the absorption of producing countries in eastern Europe into the Soviet area of control and the disturbances in the Middle East.

Meanwhile, interest in a bilateral agreement with Britain also has faded, and at the present time there are no disputes between England and the United States which would call for its application.

On the other hand, there is at least one impelling reason why the agreement should not be revived—the very definite probability that if it was ratified Moscow would scream about another pact between the Western Powers to strangle Russia—and there is enough screaming from the Kremlin

on other subjects to give Washington the jitters without adding to the cacophony.

Of Things to Come

A FULL-SCALE revamping of operations in the field of petroleum now spread among some 30 different government agencies is expected to be undertaken next winter if the Republicans come out on top at the polls in November.

Blueprint for a reorganization of the government establishment which Gov. Thomas E. Dewey has promised if he becomes President will be the report to be filed next January by a nonpolitical commission under Former President Herbert Hoover which for the past year has been making an engineering and economic survey of the present setup.

A basic recommendation in the Hoover report will call for elimination of duplication and overlapping of activities and a streamlining of the government organization so as to bring together, so far as possible, all activities relating to the same subject.

The same objective was sought by President Truman in setting up the Oil and Gas Division, one of the duties of which was to be to "develop proposals looking to the centralization of federal functions and activities relating to oil and gas," and another to "coordinate all oil and gas policies and activities in the Department of the Interior." The OGD, however, has never made any recommendations for the physical transfer of the petroleum functions of any agencies.

While it is probable that the number of agencies dealing with oil can be cut by 75 per cent or more, it will be impossible to put all oil functions in a single agency. Matters relating to oil taxes, for example, must be kept in the Treasury; international oil policy must be administered by the State Department, and the departments of Justice and National Defense have responsibilities in connection with oil that cannot be shifted.

Demand for Oil Products This Winter Will Be Met, Boatwright Declares

THE petroleum industry will meet demands during the next 6 months, baring idle refinery capacity due to strikes, because the industry has the capacity to produce oil, transport it, refine it, and distribute it to the customers in quantity in keeping with growing requirements, it was declared by John W. Boatwright, general manager of the distribution economics department of Standard Oil Co. (Ind.), in addressing the Michigan Petroleum Association in Traverse City, September 14.

Salient points of the national petroleum picture as seen by Boatwright are:

1. The oil industry to date in 1948 has achieved an expansion of supplies of 9.5 per cent as compared with an estimated increase in demand of 7 per cent. The industry was able to restore stocks of crude and products through June this year at a rate of 127,000 bbl. per day. Perhaps the principal contributing factor to the improved domestic picture is the shift of the import-export balance which in 1947 saw exports exceed imports by 13,300 bbl. per day, while through June this year the pendulum has shifted the other way and imports have exceeded exports by 117,000 bbl. per day.

2. The transportation situation on petroleum products has been appreciably corrected in the past 12 months. Substantial additional pipe-line capacity has been completed. Tankers are in surplus supply at present. Tank cars last year were extremely tight, while today no particular problem exists.

3. Refinery capacity of the industry was ample throughout the tight supply situation of 1947 and early 1948. As crude supplies have mounted more rapidly than refinery expansion has been achieved, the industry is more nearly approaching the capacity of its refineries, and it is inevitable that additional refinery capacity will be brought into existence as needed to meet market requirements.

4. Estimated demand for petroleum products on a national basis will continue upward at approximately 7 per cent over last winter during the forthcoming 6-month period. The major uncertainty concerning demand is the requirements of the armed services. Occasionally, rough spots will be encountered if military demand assumes proportions that necessitate a shift from civilian to military specifications.

"This more happy situation, in my judgment," said Boatwright, "reflects accomplishments under a system free from governmental restrictions on consumption, governmental control of prices, governmental direction of expenditure of funds and provision of facilities. In fact, this is the net result of the best efforts of each individual and organization to eliminate the problem."

Program for San Antonio I.P.A.A. Meeting Announced

Speakers of national prominence as well as the usual reports of officers and committees will feature the nineteenth annual membership meeting of the Independent Petroleum Association of America at San Antonio September 27 and 28.

Dr. Gustav Egloff of Universal Oil Products Co., Chicago, will speak at the luncheon September 27 on "Can the United States be Self-Contained as to Oil?," and the banquet that evening will be addressed by Sen. George W. Malone of Nevada on the subject "The Place of Government in Developing Our Mineral Resources." At the luncheon the following day the speaker will be Chief Justice Bolitha Laws of the United States District Court for the District of Columbia, using as his subject "Your Legal Umpire."

The president of the association, Merle Becker of W. C. McBride, Inc., St. Louis, will make his annual report at the opening general session Monday morning, followed by election of officers and directors. Russell B. Brown, general counsel, and Minor S. Jameson, Jr., I.P.A.A. economist, will make reports on the status of the oil industry in Washington at the afternoon session. Business sessions on Tuesday will be devoted to committee reports and planning the association's program for the coming year.

Various committees have scheduled meetings for September 25 and 26, and membership registration will open on Sunday. A wide variety of entertainment features has been planned in connection with the meeting.

Shell Formally Dedicates Synthetic Glycerine Plant

The new synthetic glycerine plant of Shell Chemical Corp. at Deer Park near Houston, Tex., was formally dedicated September 16 with ceremonies attended by representatives of major chemical companies from many parts of the country.

The $8,000,000 plant, first in the world to produce glycerine synthetically, will use petroleum refinery gases as raw material and is part of a large petro-chemical development of Shell.

Dr. W. V. Houston, president of Rice Institute, dedicated the plant in the presence of J. Oostermeyer, president of Shell Chemical Corp., San Francisco, members of the Texas Railroad Commission, and other invited guests, following which the official party was entertained at a dinner by the Houston Chamber of Commerce.

A detailed report on the new glycerine plant begins on page 88 of this issue of The Oil and Gas Journal.

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Liquid always shows black—empty space shows white. Preferred where the liquid level must be easily and positively visible, and when liquids are under high pressure or at high temperature. Made of alloy temperature resisting steel and are highest quality throughout. Liquid chamber made from solid block of steel to assure perfect alignment and rigidity. Conform with A.P.I.—A.S.M.E. requirements.

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Used to observe color and density of liquids under high pressures and/or temperatures. Construction exceptionally sturdy. Made of alloy temperature resisting steel, and are highest quality throughout. Liquid chamber made from solid block of steel to assure perfect alignment and rigidity. Conform with A.P.I.—A.S.M.E. requirements.

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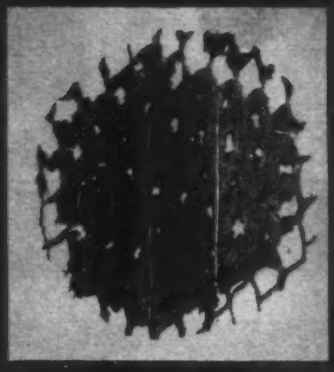

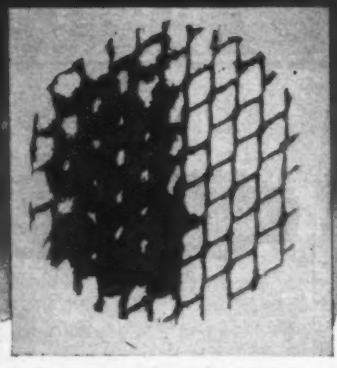

Same screen as above after temperature rise to 775° F—the treated soot has burned off; untreated coal soot usually burns at about 1135° F.

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Soot removal with Nalco SR-150 is accomplished with the furnace operating as usual—no need to provide special firing conditions or take boilers off the line. For large furnaces, Nalco has developed an efficient SR-150 feeder—so simple it can be built in most plant maintenance shops. For small furnaces, SR-150 can be fed directly with the fuel, either hand or stoker fired.

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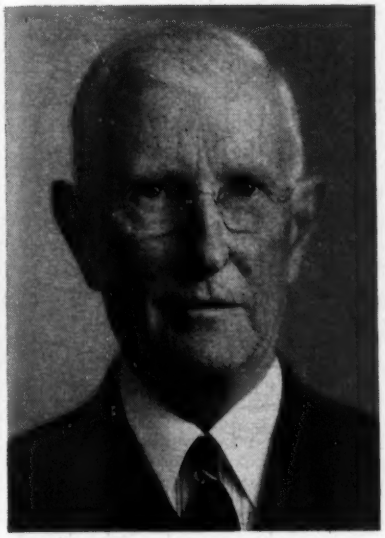
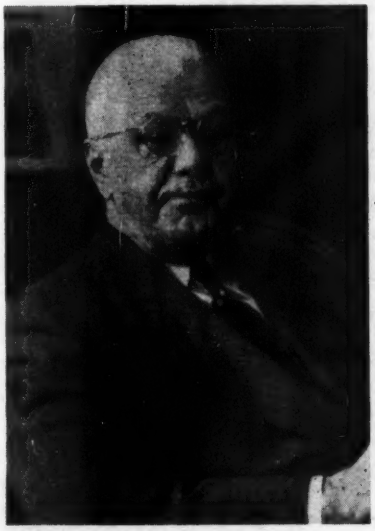


DANA H. KELSEY

Kelsey, Cook Retire From Sinclair-Prairie

W. L. CONNELLY, chairman of the board of the Sinclair-Prairie Oil Co., announces the retirement of Dana H. Kelsey, vice president of the company, and Fred S. Cook, of the legal department, effective October 1. In announcing the retirement Connelly expressed the appreciation of the New York and Tulsa officials of the company for the many years of outstanding service of both Kelsey and Cook, who are widely known throughout the oil industry of the southwest.



FRED S. COOK

Kelsey, who is retiring at his request, will remain on call for consultation and special assignments by the Sinclair company. T. H. Hammett of the legal department has been elected a vice president of the company, and he and H. B. Smith, vice president, will take over Kelsey's duties.

Kelsey was born at Versailles, Mo., and early in life entered government service in the Indian Territory, now part of Oklahoma. He was admitted to the practice of law in federal and state courts. In 1905 President Theodore Roosevelt appointed him superintendent of the Five Civilized Tribes, and he continued in that position until 1915, a period which witnessed the initial oil development of Indian leases in Oklahoma.

He joined the Prairie Oil & Gas Co. in 1915 as general superintendent and served the company in various capacities, becoming vice president and general manager in 1923, with offices in Independence, Kans. When the Sinclair and Prairie companies were merged in 1932 he was elected to his present position and took an active part in directing the operations of the producing units of the Sinclair organization. He has been active in several oil organizations and was one of the founders of the Mid-Continent Oil and Gas Association. In May of this year he was elected as one of the eight pioneers of the oil industry at the International Petroleum Exposition.

Cook a Pioneer

Cook was also originally associated with the government in the Indian Territory and was commissioned a special U. S. Agent under Kelsey. He joined the land department of the Prairie organization in 1915 and succeeded Kelsey as general superintendent of the land department in 1923, remaining in that position until the Prairie and Sinclair companies were merged in 1932. Since that time he has been active in the legal department of the Sinclair-Prairie Co. and upon his retirement will have a combined service with the Sinclair and Prairie companies of 33 years.

George R. Gibson, for more than 4 years district geologist in Midland, Tex., for Richfield Oil Corp. for West Texas and New Mexico, has resigned to join Seaboard Oil Co. of Delaware as geological coordinator for Seaboard in West Texas. **Ralph D. Chambers,** of the Richfield geological staff, will succeed Gibson as district geologist for the company in the Permian Basin.

L. C. Pryor, in charge of the Great Bend office and field force for the conservation division of the Kansas Corporation Commission, has resigned to take over management of the Kansas Fluid Level Service, which will operate echometer well-testing equipment and will provide consulting service to operators.

Ronald K. DeFord, chief geologist for Argo Oil Corp., Denver, Colo., and manager of the company's West Texas district at Midland, Tex., has resigned to become a member of the faculty of the school of geology at the University of Texas where he will direct special projects in the graduate school. **J. J. Bailey** has been named to succeed DeFord as Argo's West Texas district manager. No appointment was made to the position of chief geologist for the company.

R. S. Blazer is the newly elected president of Allied Oil Co., Inc. He had been vice president in charge of marketing since 1938. He joined Allied Oil in 1928 following graduation from the University of Illinois. Later he served as sales representative, assistant sales manager, and sales manager. He was named a vice president and member of the board of directors in 1938.

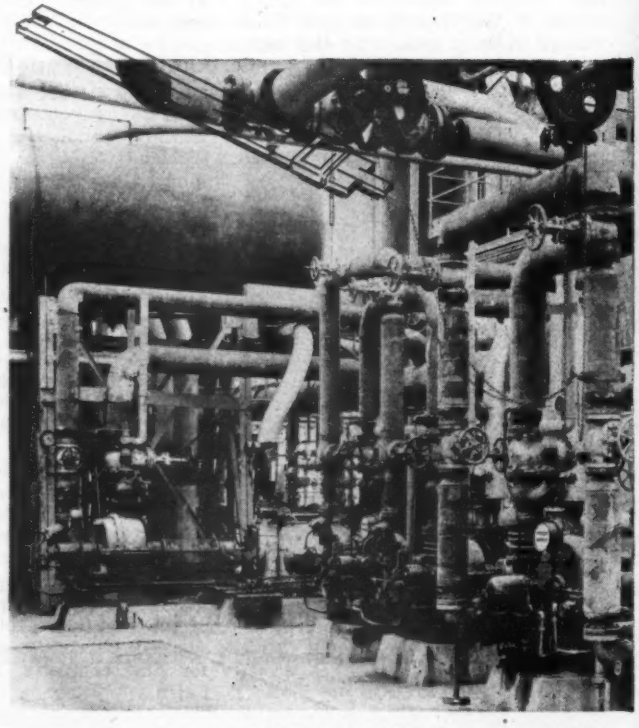
William B. Padon has been recalled by Warren Petroleum Corp. from a temporary assignment at Houston to assume more responsible duties in the company's Tulsa sales division headquarters.

Earl L. Moser has been named to succeed **John C. Naye** as industrial relations manager of the Washington division of General Petroleum Corp., Los Angeles, Calif. Naye was named assistant credit manager of the company's Southern California division.

Dr. A. B. Parsons has resigned as secretary of the American Institute of Mining and Metallurgical Engineers effective in February 1949. He has held the post 18 years. Dr. Parsons is now on leave of absence.

Harold W. Stoltenberg, of the geological department of Superior Oil Co. in the division office at Midland, Tex., has resigned to become a consulting geologist with offices in Midland. Prior to joining Superior Stol-

Progress calls



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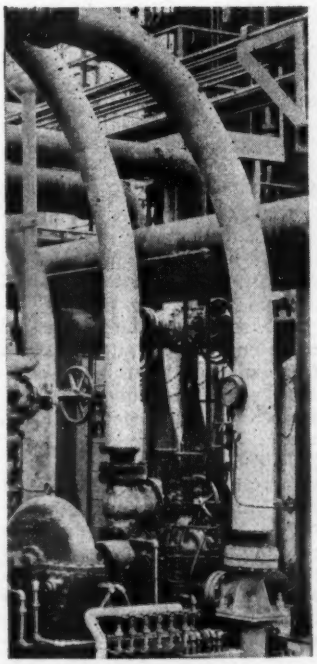

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tenberg served with Phillips Petroleum Co. 10 years.

Charles W. Oliphant, petroleum exploration consultant of Tulsa, was recently awarded a certificate of appreciation from the Army and Navy for his aid in developing a war-time radar jamming device.

John E. Weber has been appointed manager of the planning department of the engineering division of Catalytic Construction Co., subsidiary of Houdry Process Corp.

J. Howard Marshall, president of Ashland Oil & Refining Co., Inc., and **A. J. Points,** comptroller, of Ashland, Ky., spent several days in the Tulsa office of the company this week confering with staff personnel regarding changes in operations required by the company's recent merger with Allied Oil Co.

James M. Bradley, assistant manager of the northern division of Interstate Oil Pipe Line Co., has been appointed technical assistant to **President Loren F. Kahle.** Bradley joined Interstate in 1945 as assistant manager of the northern division. Previously he had served with Oklahoma Pipe Line Co. He joined Standard Oil Co. (N.J.) in 1936 and served in South America until 1941, when he became eastern division superintendent for Plantation Pipe Line Co., a position he held until joining Interstate.

Claude E. Swift, manager of research and patent counsel for Union Oil Co. of California, has been elected vice president of the company in charge of research and patents. Swift joined the company in 1926 as a senior inspector in the research department of the Wilmington refinery. Later he served as junior chemist and assistant chemist and in 1930 was appointed chemical engineer in the patent division. He became a patent engineer in 1934, assistant patent counsel in 1938, and patent counsel in 1939. He was appointed manager of research and patent counsel in July 1947.

Frank Pickell, manager of the industrial-relations department of Stanolind Oil & Gas Co., has been named adviser in industrial relations. He is being succeeded as department manager by **Robert S. Newhouse.** Pickell had managed the company's industrial-relations program for the past 5 years. Newhouse formerly was with Industrial Relations Counselors, Inc., New York nonprofit research organization.

J. E. Regent, manager of Permian Basin operations for Sun Oil Co. for more than 3 years, has been appointed manager of the company's newly created division offices in Denver. The new division will include Colorado, the San Juan basin of New Mexico, Wyoming, Montana, Arizona, Idaho, Utah, and Nevada. Changes in the Permian Basin include: **Dana Whitten,** formerly at Midland, appointed district geologist at Abilene; **Bob Totten,** to district geologist at Amarillo; **Hans Winkler,** formerly at Midland, district geologist at Roswell, N. M. **C. C. Pope** will remain in charge of the Sun offices in San Angelo.

Charles A. Hitt, Jr., has joined the Midland division of Hiawatha Oil & Gas Co. as a landman.

E. Otto N. Williams, of Richmond, Va., has been named president of the newly organized Virginia Liquefied Petroleum Gas Association.

H. A. Merrill, formerly of Wichita Falls, Tex., has been named to the geological staff of the Sinclair Prairie Oil Co.'s district office at Midland, Tex.

C. L. McArthur, Jr., has been named to head the new district land and geological office of Lion Oil Co. at Corpus Christi. McArthur formerly was district landman at Abilene, Tex. **Louis Weltman** has been transferred to Corpus Christi from Jackson, Miss., as district geologist.

R. H. McElroy, vice president in charge of marketing for Pure Oil Co., Chicago, and **H. L. Moir,** technical adviser to Pure's sales department, have been appointed to membership on the lubrication committee of the American Petroleum Institute.

Warren A. Beman, process products engineer of Socony-Vacuum Oil Co., Inc., has been transferred from Albany, N. Y., to the company's chemical products division of the lubricating department headquarters in New York City as a staff engineer. **G. H. Hocking,** formerly process products engineer in Philadelphia, will replace Beman at Albany.

W. D. C. MacKenzie, Toronto, has been named assistant manager of production of Imperial Oil, Ltd. MacKenzie will serve under **Walker Taylor** at Calgary. **H. L. Stevens,** engineer coordinator in the Calgary office, will succeed MacKenzie at Toronto as engineering adviser. **J. D. Gustafson,** division petroleum engineer, has been named division engineer. He will be succeeded by **E. D. Wilson.**

Tom Lumpkin, since 1946 resident counsel in Venezuela for Phillips Petroleum Co., has resigned, effective October 1, to join Mene Grande Oil Co. as manager of the company's public-relations department. He also has been appointed a member of Mene Grande's four-man executive commit-

By a majority vote of the executive committee, the North Texas Section of American Institute of Mining and Metallurgical Engineers recently reached agreement with the Department of the Army to sponsor certain reserve intelligence units. This part of the Army's affiliation program of establishing reserve units made up of personnel qualified for particular types of Army duty by reason of education and training, civilian background, and occupation. Present at the signing of the agreement were, left to right: Lt. Col. Harry E. Werner, representing the Fourth Army; Lt. Col. Jack A. Crichton, of DeGolyer & MacNaughton, Dallas, who as a member of the Military Intelligence Reserve will command the reserve units to be sponsored; Warren J. Jackson, Lane-Wells Co., Dallas, who signed as chairman of the North Texas Section, A.I.M.M.E.; and Maj. Roy H. Adams, representing the Department of the Army. Direct appointment as an officer in Military Intelligence is available to members who can qualify with bachelor's degrees from accredited colleges or universities in certain specialized fields of engineering and science

NEWS!

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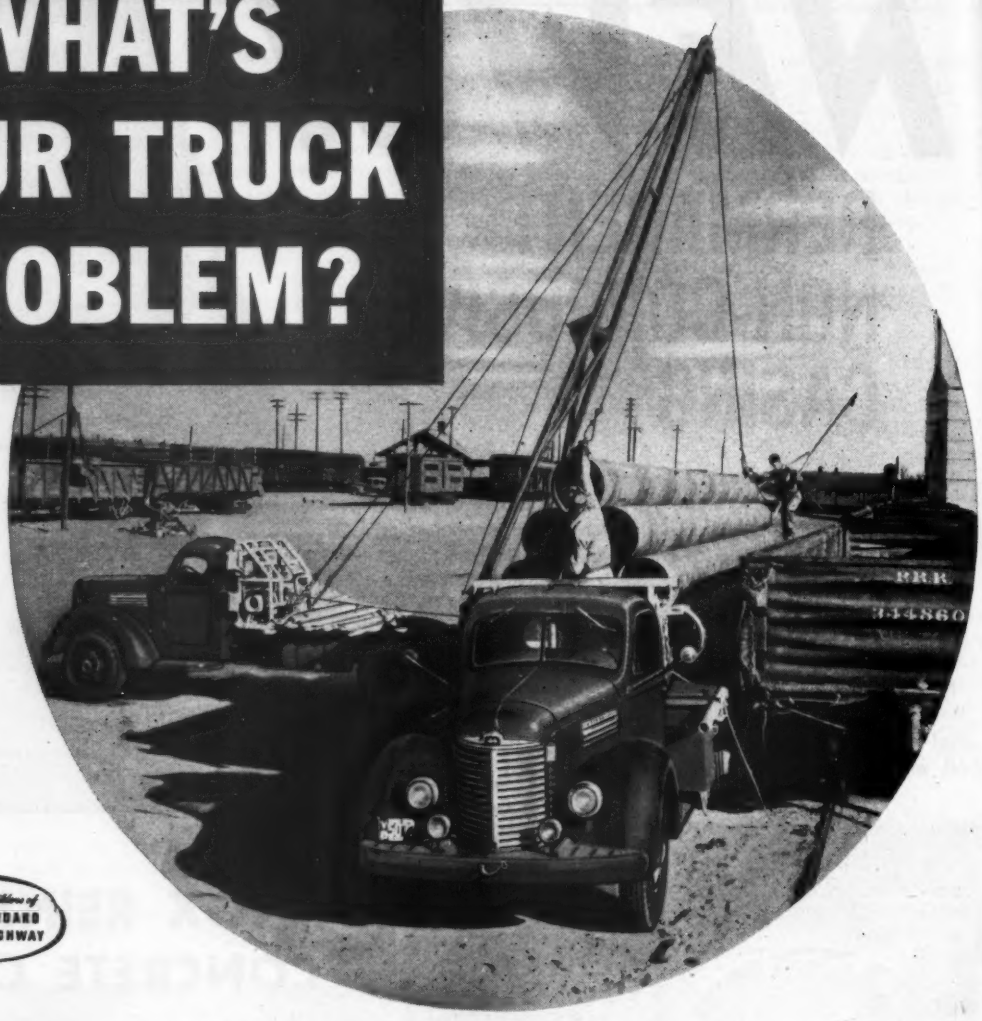

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tee. Lumpkin, who joined the Phillips organization in Amarillo, Tex., following his graduation from the University of Texas, went to Caracas during the war as assistant legal attache.

Ward Edinger, engineer in the production laboratory of Carter Oil Co., was speaker last week at a meeting of the Oklahoma Geology Society in Oklahoma City.

James F. Magner has been appointed a foreman in the machinist department of the Bayway refinery of Esso Standard Oil Co.

Frank J. Butorajac has been promoted to engineer foreman in the Pittsburgh Works of Esso Standard Oil Co. of Pennsylvania.

Leroy Donald has been appointed chief agronomist of Lion Oil Co.

Henry R. Wooford, head of the geological department of Standard Oil Co., S.A., Argentina, has resigned to return to San Antonio, Tex., where he will open offices as a consulting geologist.

Henry Stewart, head of the engineering coordination department of Cia. Nativa de Petroleos, S.A., left Buenos Aires, Argentina, early this month for the United States, where he will study the latest petroleum-processing methods.

William Schwarz, superintendent of the Dock Sud, Argentina, refinery of Cia. Ultramar S.A.P.A., has returned to Argentina after spending several months in the United States.

J. B. Fairfield, Chicago manager of the Great Lakes Refining Co. Division of Petco Corp., has resigned.

J. A. Wilson, formerly district sales manager for Gulf Oil Corp. in North Texas, has been transferred to Houston as a member of the division manager's staff.

Ross Stuntz, superintendent of production for Cities Service Gas Co., was principal speaker last week at a meeting of the Oklahoma City Engineering Club.

SHIFTS—

Marion Knight, engineer, Union Oil Co. of California, Torrance to Los Angeles, Calif.; **R. Ingersoll,** foreman, Argo Oil Corp., Hobbs, N. M.; to Denver City, Tex.; **E. Deckard,** superintendent, Wheless Drilling Co., Lufkin, Tex., to Vivian, La.; **Richard R. Loring,** engineer, The Texas Co., Sequin to San Antonio, Tex.; **Jack J. Cowden,** geologist, Continental Oil Co., Abilene to Iowa Park, Tex.

L. B. Howard, Jr., superintendent, American Republics Corp., Daisetta to Houston, Tex.; **Harold L. Miers,** foreman, American Republic Corp., Silsbee, to Daisetta, Tex.; **John S. Floeter,** foreman, American Republics Corp., Dequincy, La., to Silsbee, Tex.; **L. W. Goodrich,** engineer, The Texas Co., El Campo to Seguin, Tex.; **C. H. Danchertgen,** engineer, Amerada Petroleum Corp., Midland, Tex., to Tulsa.

T. P. Drew, superintendent, The Texas Co., Pampa to Midland, Tex.; **W. L. Hagan,** engineer, Stanolind Oil & Gas Co., Pampa to Fort Worth, Tex.; **Wilbur O. Henderson,** foreman, Ohio Oil Co., Reed City to Allegan, Mich.; **Charles L. Heald,** geologist, United Geophysical Co., Sheridan to Buffalo, Wyo.; **Robert Davenoprt,** enginer, Amerada Petroleum Corp., Holdenville, Okla., to Scott City, Kans.; **J. A. Cleverley,** superintendent, Cities Service Oil Co., Oklahoma City to Bartlesville, Okla.

A. C. Webb, engineer, Shell Pipe Line Corp., Crosby to Anahuac, Tex.; **J. A. Perkins, Jr.,** engineer, Gulf Oil Corp., Hamshire to Houston, Tex.; **I. N. Taylor,** engineer, Stanolind Oil & Gas Co., Andrews, Tex., to Oklahoma City; **F. A. Schurtz,** engineer, Shell Oil Co., Inc., Graham to Wichita Falls, Tex.; **J. S. Welboan, Jr.,** engineer, The Texas Co., Kermit, Tex., to Tatum, N. M.

W. R. Tierce, foreman, Shell Pipe Line Corp., Odessa, Tex., to Eunice, N. M.; **Douglas L. Saunders,** engineer, Sun Oil Co., San Antonio to Longview, Tex.; **C. K. Seaman, Jr.,** superintendent, Humble Oil & Refining Co., New Iberia, La., to Everglades, Fla.; **William Harris White,** geologist, California Co., Richmond, Ky., to Cooperstown, N. Y.; **B. M. Scofield,** engineer, Cit-Con Oil Corp., New York to Lake Charles, La.; **L. K. Wood,** superintendent, Socony-Vacuum Oil Co., Inc., Rochester, N. Y., to Northhampton, Pa.

R. E. McClintock, superintendent, Rocky Mountain Drilling Co., Oxnard to Coalinga, Calif.; **P. A. Johnson,** engineer, Shell Chemical Corp., San Francisco to Burlingame, Calif.; **N. J. Lea,** foreman, The Texas Co., Taft to Paso Robles, Calif.; **Wesley E. Davis,** geologist, The Texas Co., Farmington, N. M., to Bellaire, Tex.; **N. C. Galloway,** superintendent, Humble Oil & Refining Co., Brookshire to Katy, Tex.

Paschal Martin, engineer, Pure Oil Co., Gilmer to Fort Worth, Tex.; **J. H. Sidwell,** engineer, Sinclair Prairie Oil Co., Houston, to Tulsa; **Henry Burrows,** superintendent, Cities Service Gas Co., Pampa, Tex., to Lyons, Kans.; **Oliver R. Young,** foreman, The Pure Oil Co., Sweetwater to Van Horn, Tex.; **Loyd Burson,** superintendent, Wheless Drilling Co., Carthage, Tex., to Paradis, La.; **W. D. Coyne,** engineer, Shell Oil Co., Inc., Godfrey to Roxana, Ill.

DEATHS

William E. Finefield, 78, drilling contractor and a pioneer cable tool driller in Kansas and Oklahoma, died September 10 in Wagoner, Okla. Finefield entered the oil industry with Prairie Oil & Gas Co. at Chanute, Kans., in 1899. He went to Oklahoma in 1907 with J. P. Wiser, later Wiser Oil Co. at Chelsea.

Otta Gay Leichliter, president of Mudge Oil Co. of Texas, died September 9 at his home in Dallas. He was regional vice president of the Independent Petroleum Association of America and a member of the Dallas Petroleum Club.

James J. Ellis, former general foreman in the process department of the Bayway refinery of Esso Standard Oil Co., died recently.

Orville D. Hennage, 73, Tulsa, retired drilling contractor, died September 12. Hennage was drowned in an accident at the Cherokee Yacht Club boat dock on Grand Lake, in eastern Oklahoma.

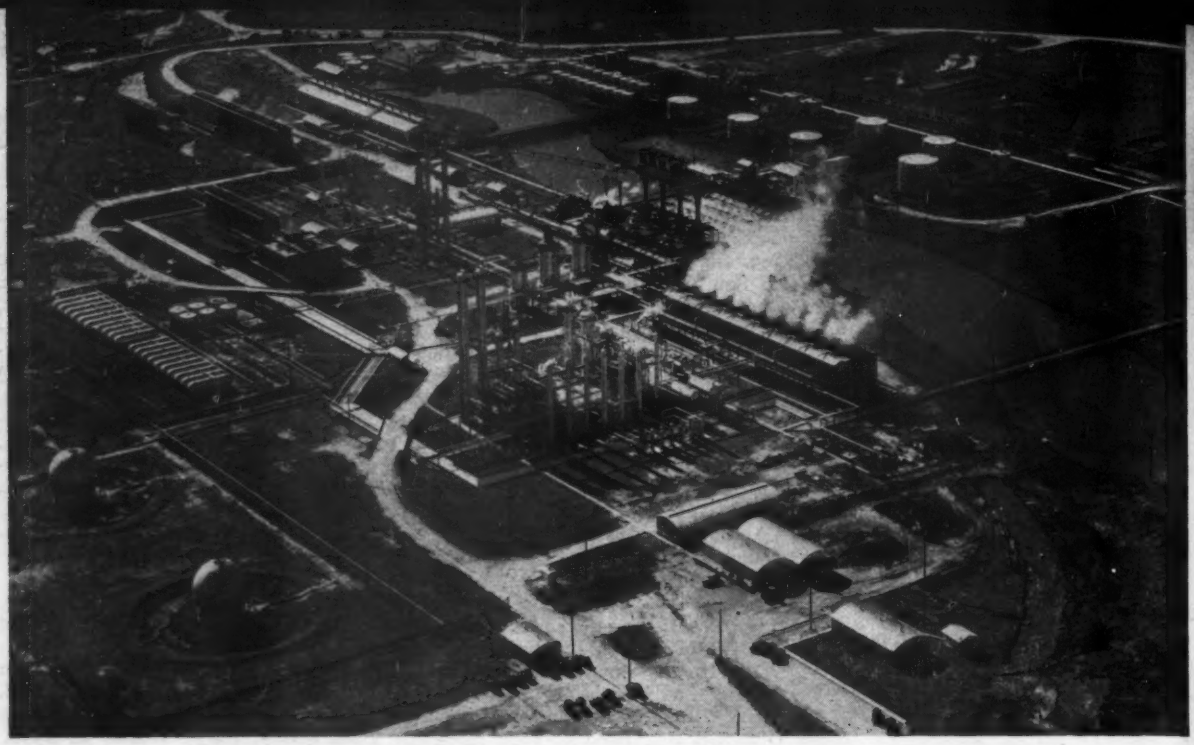
Lorenzo Dow Wrist, 78, retired oil man, died recently in Houston. He formerly was associated with The Texas Co.

Emil R. Gasser, 44, chief physicist of Farrell-Birmingham Co., died recently at his home in Buffalo, N. Y. He joined the company in 1928 and for the past 3 years had been director of research activities.

Howard Butt, 58, vice president and New York manager of William Powell Co., valve manufacturer, died recently at his home in Morristown, N. J.

Pierce Withers, 53, former Pierce, Tex., oil man and rancher, died September 13 in Chicago.

G. Leroy Ramsey, 75, president of Ramsey Petroleum Co., Eldorado, Kans., died recently.



The Old Ocean gas-processing plant with an absorption capacity of 350,000 M.c.f. daily and compressor capacity of 268,000 M.c.f. daily is one of the largest on the Gulf Coast. On the basis of gas input it is exceeded only by the Humble Oil & Refining Co. Katy plant in Waller County

Nation's Largest Voluntary Unit

FORMED ON TEXAS GULF COAST

by Leigh S. McCaslin, Jr.

ON August 1, Old Ocean field of Brazoria and Matagorda counties, Texas Gulf Coast, began operation under a unit agreement, thus becoming the largest voluntarily unitized oil and gas field in the United States.

Over 93 per cent (585) of the royalty owners and more than 98 per cent (10) of the leasehold operators in the field have agreed to the unit plan of operation. This group taken together owns more than 98 per cent of the mineral interests in the field which is one of the nation's largest oil and gas condensate fields. Current daily production from the field is 22,000 bbl.

Unitization was accomplished, with J. S. Abercrombie Co. as unit operator, after 2 years of study by both operators and royalty owners. Engineers estimate that over 78,000,000 additional barrels of oil and condensate, plus about 200,000 bbl. per year of plant products will be recovered as a result of the unitization. This will be accomplished by a pressure-maintenance program, control of production and injection wells, and stabilization of all liquid hydrocarbon production.

Seven Major Benefits

Engineering studies undertaken in preparation for unitization have ascertained seven major benefits to be derived from the unitization plan. These are as follows:

1. Prevent retrograde condensation in the gas-cap areas and prevent the precipitation of condensate (or distillate) equal to 27,701,000 bbl.

2. Control of the production and injection wells will permit high recoveries of the wet (condensate-bearing) gas by easily 100 per cent larger quantities than would otherwise prevail. In other words, control of the program is necessary to recover 13,850,000 of the 27,701,000 bbl. mentioned above.

3. Proper control of the expansion of the gas cap and maintenance of pressure is expected to increase oil recovery, resulting in the additional recovery of 50,759,000 bbl. of oil.

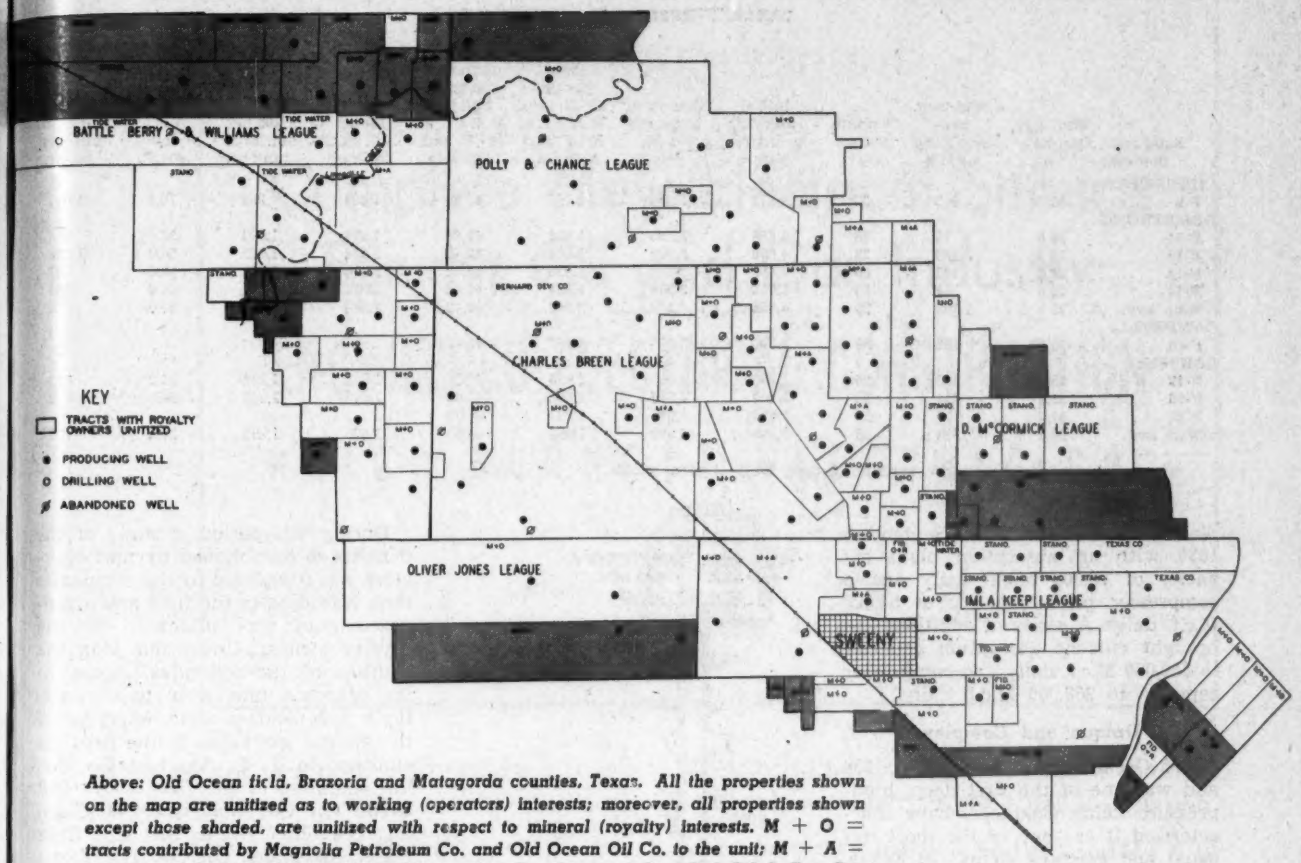
4. Large quantities of dry "residue gas" will be stored for future use and sale after it has been used to obtain the recovery of "wet" (condensate-bearing) gas and oil from the various reservoirs.

5. Stabilization of all liquid hydrocarbon production will recover approximately 195,060 bbl. per year of products which are now lost to the atmosphere.

6. Proper choice of producing wells will permit the recovery of oil with the expenditure of a minimum amount of energy by producing the low gas-oil ratio wells, thus reducing the amount of gas necessary for reinjection and the corresponding operating cost and thereby extending the economic limit and further increasing the ultimate recovery.

7. Proper structural location of wells will permit more efficient drainage of certain fault blocks.

To carry out the pressure-maintenance program, there is already in existence in the field the second largest compressor and gasoline absorption plant in the Gulf Coast area on the basis of gas input. The original



Above: Old Ocean field, Brazoria and Matagorda counties, Texas. All the properties shown on the map are unitized as to working (operators) interests; moreover, all properties shown except those shaded, are unitized with respect to mineral (royalty) interests. M + O = tracts contributed by Magnolia Petroleum Co. and Old Ocean Oil Co. to the unit; M + A = tracts formerly Magnolia and J. S. Abercrombie Co.; Stano = Stanolind Oil & Gas Co.; Fide = Fidelity Oil & Royalty Co. Below: Old Ocean field—north south—generalized cross-section

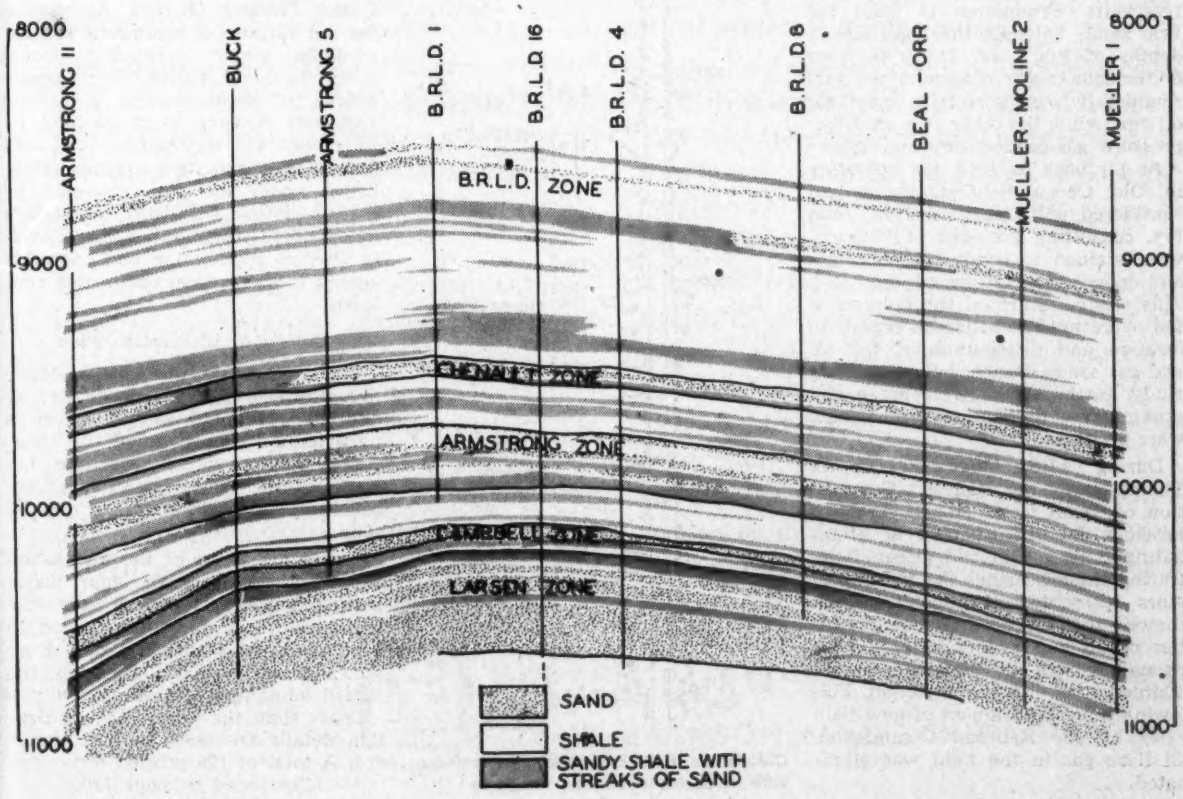


TABLE 1—RESERVOIR CONDITIONS

Sand and member—	Wtd. avg. porosity (%)	Wtd. avg. permeability (md.)	Connate water (%)	Initial reservoir pressure, psig.	Reservoir pressure 7-1-46, psig.	Wet gas per ac.-ft. sand M.M.c.f. at 60° F. and 14.65 psia.	Hydrocarbon* content of wet gas-C_5 bbl. per M.M.c.f. at 60° F. and 14.65 psia.	Shrinkage factor for oil, bbl. reservoir oil per bbl. stock-tank oil	Solution ratio, cu. ft. at 60° F. and 14.65 per bbl. stock-tank oil	Gravity of oil °A.P.I. at 60° F.	Stock-tank oil, bbl. per ac.-ft.
CHENAULT:											
F-9	27.4	553	24	4,472	3,210	2.137	45.64	1.494	992	36.5	1,081
ARMSTRONG:											
F-11	25.0	79	26	4,658	3,660	1.938	42.42	1.574	1,022	36.0	912
F-12	27.2	3,435	23	4,658	3,660	2.194	42.42	1.574	1,022	36.0	1,032
F-13	26.3	167	30	4,658	3,660	1.928	42.42	1.574	1,022	36.0	907
F-14	25.0	61	25	4,658	3,660	1.964	42.42	1.574	1,022	36.0	924
Wtd. avg.	26.4	1,703	25	4,658	3,660	2.074	42.42	1.574	1,022	36.0	976
CAMPBELL:											
F-16	23.0	132	35	4,797	3,090	1.578	40.47	....	....	....	....
LARSEN:											
F-19	25.1	1,553	25	5,200	4,980	2.075	45.08	1.675	1,252	34.0	872
F-20	22.4	644	25	5,200	4,980	1.852	45.08	1.675	1,252	34.0	778
F-21	24.6	770	25	5,200	4,980	2.034	45.08	....	....	....	....
Wtd. avg.	23.8	858	25	5,200	4,980	1.968	45.08	1.675	1,252	34.0	785

*These figures are based on average future well stream yields.

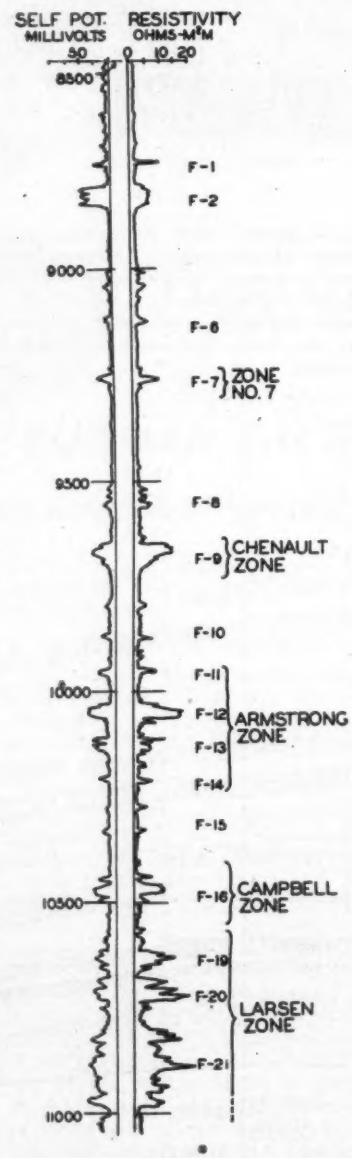
plant was completed in September 1939 with an absorption plant capacity of 78,000 M.c.f. daily and a compressor plant capacity of 54,000 M.c.f. daily. A series of additions has brought current absorption capacity to 350,000 M.c.f. daily and compressor capacity to 268,000 M.c.f. daily.

Unique and Complex

Old Ocean was discovered in 1934 and was one of the first deep, high-pressure fields. Engineers have characterized it as "one of the most unusual and complex fields" in Texas. It is a faulted domal structure and currently consists of five commercially productive reservoirs—four of which are the principal producing reservoirs. Production is from the Frio sands between the approximate depths of 9,000 and 11,000 ft. Two of the four major reservoirs are surrounded by a commercially important oil rim, while the other two are high-pressure gas-condensate reservoirs.

As far back as 1942, the operators in Old Ocean field discussed and considered unitization. In 1945, John Ivy, consulting geologist of Houston, was retained to conduct a thorough and independent study of the field. This study confirmed the opinion of the operating companies in regard to location and distribution of the oil and gas sands. Hence, following Ivy's study, further plans were made and preliminary unitization agreements were prepared.

During 1946, Chairman E. O. Thompson of the Railroad Commission of Texas, conducted a series of hearings for the purpose of eliminating flare gas in Old Ocean field. During these hearings the field operators presented testimony which showed that large additional quantities of oil and condensate could be recovered from the field by pressure maintenance with gas injection. Following the establishment of new field rules by the Railroad Commission, all flare gas in the field was eliminated.



Old Ocean field composite electrical log, with producing formations designated

During this period, a study of the benefits to be obtained by unit operation was completed by the companies then operating in the field and a proposed plan was submitted to the royalty owners. Under this plan the equities of the individual leases in the proposed unit were based upon Ivy's independent determination of the oil and gas sands in the field. In addition to J. S. Abercrombie Co., the operators in the field were: Old Ocean Oil Co., Magnolia Petroleum Co., Stanolind Oil & Gas Co., Tide Water Associated Oil Co., The Texas Co., Fidelity Oil & Royalty Co., Mound Co., and R. A. Welch.

A substantial number of royalty owners in the field formed the Old Ocean Royalty Owners Association for the purpose of evaluating the advantages which unitization would bring to them. Michel T. Halbouty, consulting geologist and petroleum engineer, Houston, was retained by the group for this purpose, as well as to investigate the equities established under the plan proposed by the operators. Following Halbouty's independent investigation, the Royalty Owners Association and operators agreed to the present unitization contract.

Details of Unitization Plan

Participation in the unit is determined on the basis of acre-feet of oil and gas sand. Oil sand is given a participation value equal to three times that given to gas sand because of the larger quantity of recoverably hydrocarbons in the oil sand.

Under the terms of the unitization agreement, each of the four major producing zones is treated as a separate unit. Gas may be returned to sand zones other than the zone from which it was produced. However, the parent zone is given credit for the gas.

Other than the above, the unitization details are more or less standard. A total of 129 printed letter-size

(Continued on page 120)

Announcement
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Write, wire or telephone for complete information on this new streamlined K-B electrical service that offers you so many advantages.

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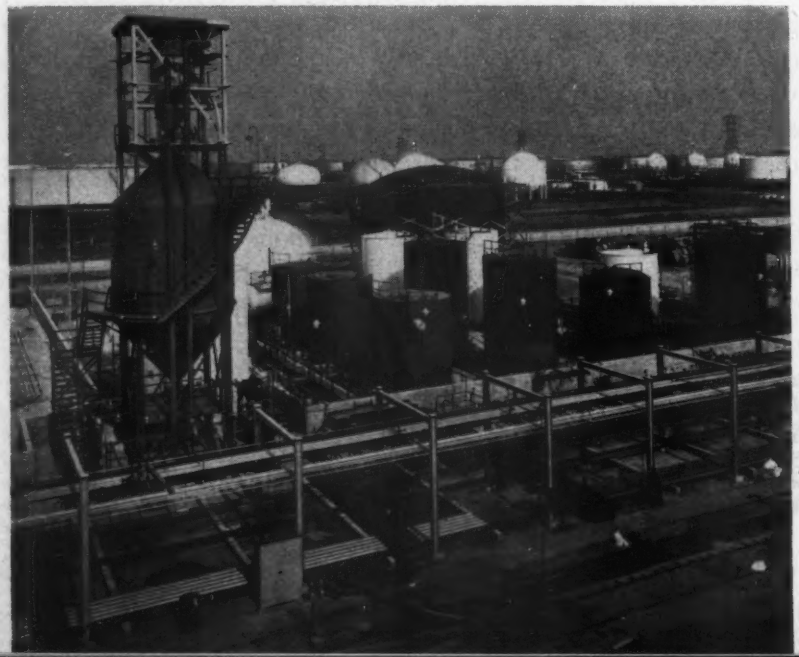
Aerial view of the huge $54,000,000 "Petrochem" plant of Shell Chemical Corp., 20 miles southeast of Houston. It is situated adjacent to the Deer Park refinery of Shell Oil Co., Inc., on the Houston Ship Channel. The new $8,000,000 synthetic glycerine plant is contained in the area within the plant site outlined in the rectangle appearing in center of photo

World's First

Synthetic Glycerine Plant

Opens at Houston

Tank farm at Shell Chemical's synthetic glycerine plant showing, in foreground, storage facilities for glycerine and chemicals related to its manufacture

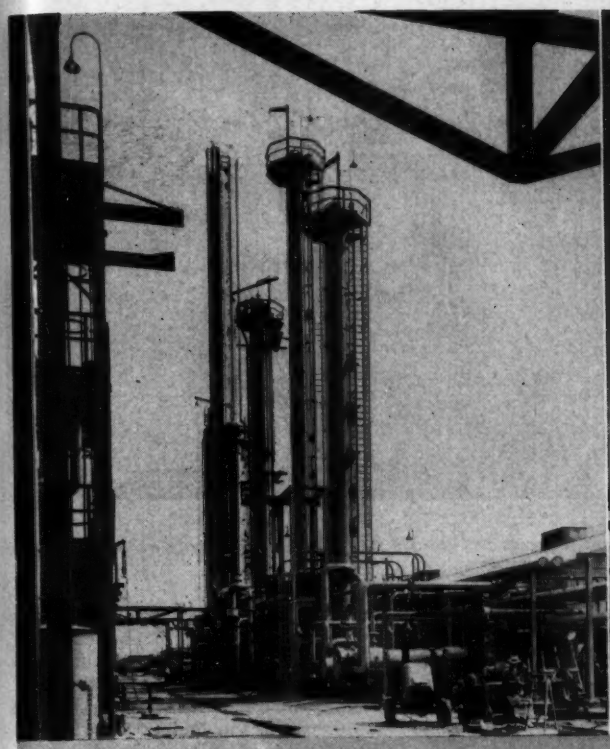


Leigh S. McCaslin, Jr.

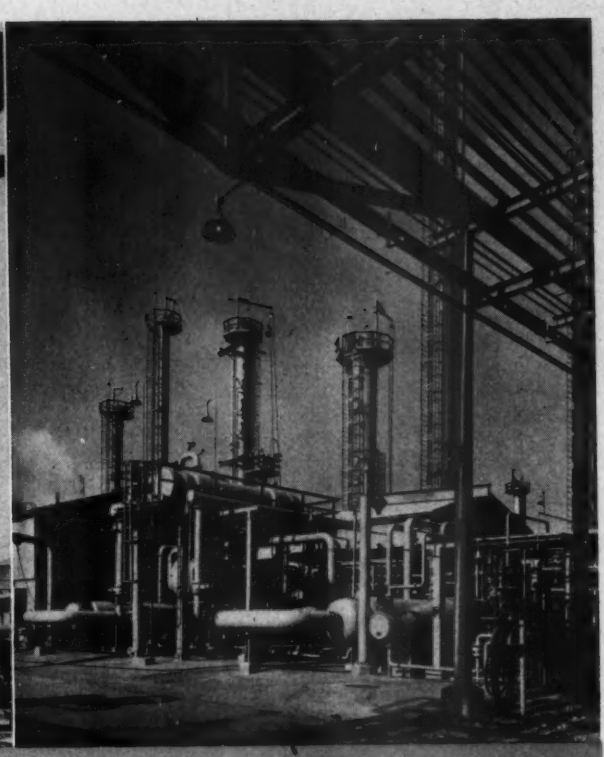
UTILIZING petroleum as a raw material, Shell Chemical Corp. has started production operations at Houston in the world's first commercial synthetic - glycerine plant — a plant which will produce 20 per cent of the nation's present consumption.

The $8,000,000 plant is located 20 miles southeast of Houston adjacent to the Shell Oil Co., Inc., Deer Park refinery on the Houston Ship Channel. It is only part of the $54,000,000 chemical plant which has been built up since December 1940, when construction began on plants for producing isopropyl alcohol, acetone, and butadiene. By the end of 1948, 16 different units, producing 19 chemicals, will be in operation.

The basic raw materials utilized in



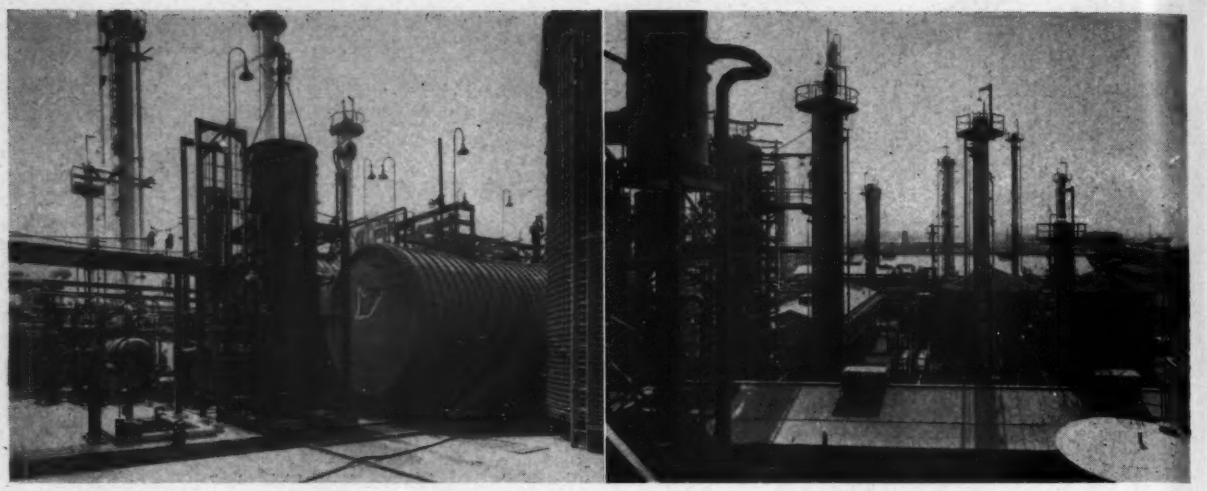
These fractionating columns are part of the processing facilities comprising Shell Chemical's synthetic glycerine plant



Elevated view of processing section for manufacturing synthetic glycerine

Another part of the processing equipment used in the commercial synthesis of glycerine. Distillation columns are seen in background

View of one of the pipeways and sections of operating equipment of new synthetic glycerine plant



Left: Close-up of equipment in operation at new glycerine plant. Right: Columns and storage tanks at Shell Chemical's glycerine division

the manufacture of synthetic glycerine are petroleum, salt, and water. More specifically, the petroleum product used is propylene. Propylene, along with butylenes and other low-boiling hydrocarbons, is contained in cracked petroleum gases. It is these gases upon which much of the petrochemical industry is based.

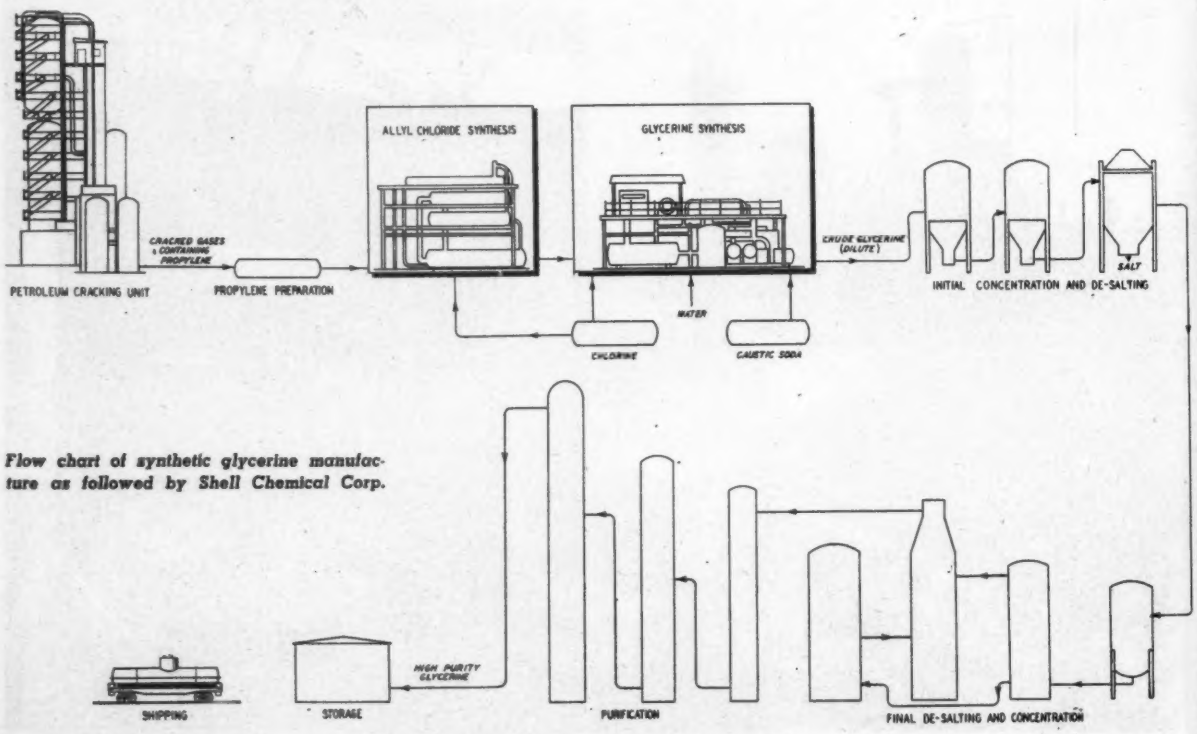
A brief description of the process being used in the Houston plant is as follows: First, propylene is chlorinated at high temperatures to form allyl chloride. The allyl chloride is then reacted with caustic soda, chlorine, and water through a series of steps to form a dilute solution of glycerine. The crude glycerine is then concentrated, desalted, and purified.

Long Research History

Initial investigations of a commercially feasible glycerine process were begun 20 years ago by Shell Development Co., Shell's research organization. From this work it was decided that the best starting point was allyl chloride. The problem of manufacturing allyl chloride from propylene had already been investigated as a part of fundamental research previously carried out on chlorination of petroleum-derived hydrocarbons, in general, and of olefins, in particular.

The mechanism of chlorination reactions was investigated in this work. In the case of olefins, it was desired to determine the factors favoring the substitution of chlorine in the molecule, leaving the unsaturated bond unaffected, as opposed to the more usual addition reaction. For, if the former type of reaction could be made to proceed with propylene, the synthesis of allyl chloride would be achieved. This reaction, however, was contrary to what was believed at the

(Continued on page 128)



Flow chart of synthetic glycerine manufacture as followed by Shell Chemical Corp.

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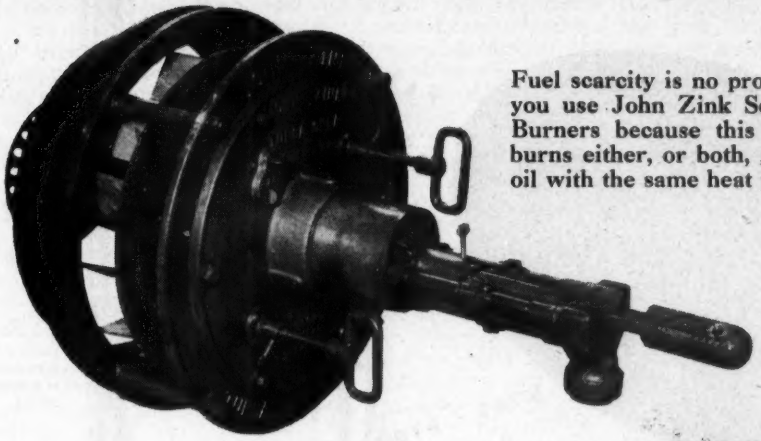

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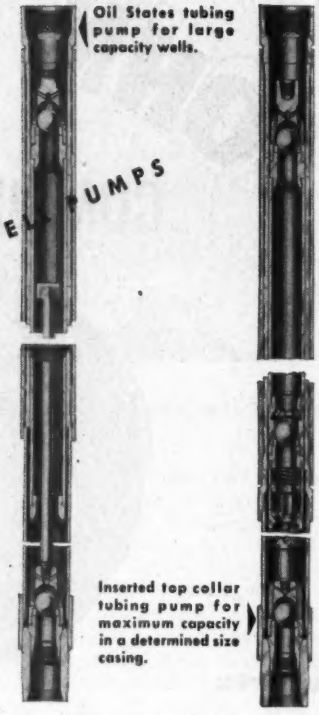
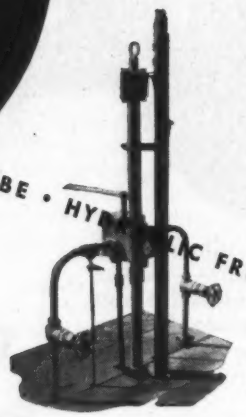


Oil States tubing pump for large capacity wells.

Inserted top collar tubing pump for maximum capacity in a determined size casing.



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INSULATION REQUIREMENTS

. . For Oil-Industry Motors

*by Paul Hernick**

APPLICATIONS in the petroleum industry are among the most severe on electric motors. Motors are required to operate under a variety of conditions. Some, on drilling rigs, for example, may be subjected to the dampness and salty atmosphere of the Gulf Coast; others, in pumping stations, to repeated overloads; and others in refineries, to excessive ambient temperatures. Yet the industry is fully justified in expecting its motors to give reliable, uninterrupted service.

The condition under which a motor operates is an important consideration. Insulation used on standard motors is designed to withstand the conditions encountered in most applications. That is, it is satisfactory for applications involving moderate amounts of moisture, oil, weak acids and alkalies, abrasive dusts, etc. Where conditions are in any way abnormal, details should be made known to the manufacturer. Special materials and processes may be used to make the motor more suitable for the given application. If conditions are severe, protected-type motors, such as splashproof or enclosed fan-cooled, should be used. For extreme conditions, totally enclosed fan-cooled or explosionproof motors are recommended.

It is well to know what materials are used in insulating a motor, and what can be expected of these materials. Motor insulation is grouped into two main classes, Class A and Class B. A third class, Class H, is relatively new and is only tentatively approved by the A.I.E.E. Standards Committee.

Fig. 1 shows cross-section of slot of large open-slot machine and component parts of coil insulation.

Class A.—Organic materials such as paper, silk, and cotton are typical Class A materials. These, however, must be immersed in a liquid dielectric, or treated so that the space between fibers is filled with a suitable material. For example, plain, untreated cotton tape is not a Class A material; it is what is known as Class O. It becomes a Class A material only when treated with a suitable varnish. Untreated materials are never used for motor insulation.

Typical Class A insulation for a small motor with partially closed slots would consist of enamel covered wire; a slot liner of a combination material such as varnished cambric and rag paper; fiber separators and wedges; varnished cambric phase separators; and varnish treatment. In a winding of this type the coil is formed and wound directly into an insulated slot. Formvar and Formex enameled wires are widely used because of their good space factor and workability.

On larger open-slot motors, preformed and preinsulated coils are used. A typical coil would be made from double cotton-covered wire, which is first well saturated with varnish. After the coil is formed to the desired shape, the ground insulation is applied. This could consist of layers of high-grade varnished tapes, the number depending on the voltage of the coils. The final taping would be a layer of cotton tape and then the coil would be given several varnish treatments. A paper slot liner would be used to tighten the coil, if needed, and hard-fiber wedges would be used.

The limiting "hottest spot" total temperature for Class A insulation is 105° C. (221° F.). This temperature is not readily measurable and is only used as a reference point. In practice limiting total temperatures are 90° C. (194° F.) as measured by thermometer and 100° C. (212° F.) as measured by resistance or embedded detector.

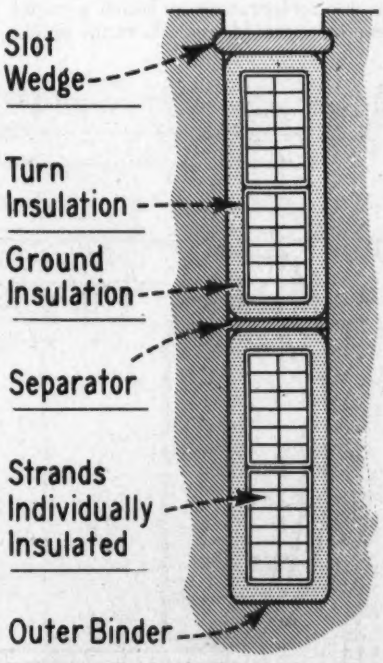

Fig. 1—Cross-section of slot and component parts of coil insulation

Class B.—Class B insulation consists of inorganic materials such as fiber glass, mica, and asbestos which are built up with organic binding materials. For example, in a sheet of flexible mica the flakes are held together by shellac or some other organic binder. Class A materials may be used sparingly for structural purposes only. The Class A materials used must not impair the properties at Class B temperature.

Mica, in its various forms, is the oldest and most widely used Class B insulating material. The mica flakes are small and mechanically weak. As used for machine insulation the flakes are held together with a binder and are usually supported by a backing of paper, or cotton or glass cloth. Mica is primarily used for ground insulation and is by far the best material for high voltages. In the past 10 years the use of fiber glass for electrical insulation has increased very rapidly. It is used both as wire insulation, and as treated and untreated cloth and tape. Like cotton it derives its dielectric strength from its varnish treatment. It is itself capable of withstanding very high temperatures, so its temperature limitations are imposed by its varnish treatment. A glass-and-mica combination material, where glass is used as a backing for the mica, makes an almost ideal full Class B material.

Because they are largely inorganic, Class B materials withstand moisture and chemicals better than Class A materials.

Again considering a small motor with partially closed slots, typical Class B insulation would consist of double glass-covered wire, a slot liner of a combination material such as glass and mica; wedges of a glass or asbestos laminate; varnished glass phase separators; and varnish treatment.

Typical Class B coils for large open-slot motors would be made from double glass-covered wire. The glass is varnished and bonded to the wire. Ground insulation would consist of varnished glass, or mica, or both, depending on the voltage. The outer

*Insulation engineer, Electric Machinery Manufacturing Co., Minneapolis.

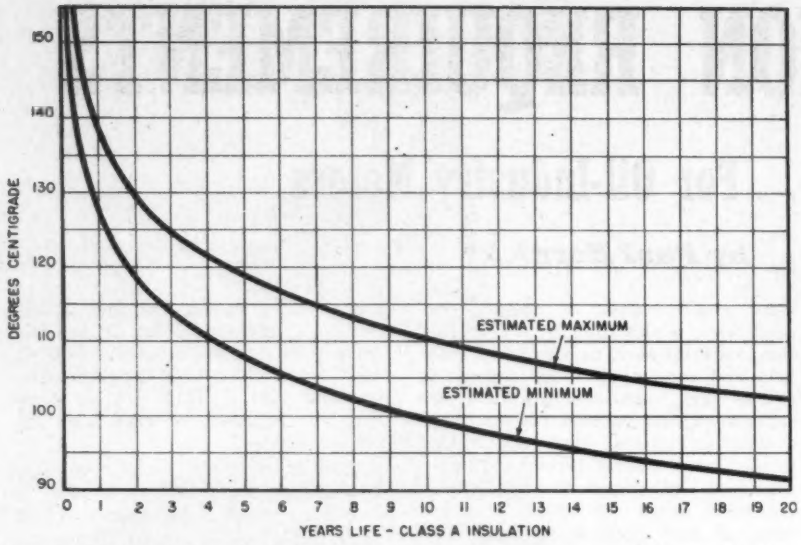

Fig. 2—Chart depicting relationship between operating temperatures and insulation life—other factors also influence operating service (see discussion)

binder would be glass tape and coils would be varnish treated. A glass or asbestos laminate would be used for wedges.

For Class B insulation the limiting hottest spot total temperature is 130° C. (266° F.). As measured by thermometer the limiting total temperature is 110° C. (230° F.) and 120° C. (248° F.) as measured by resistance or embedded detector.

Class H.—Materials in this class might be considered as Class B materials with a high temperature binder instead of organic binders. In other words, the development of silicones has made it possible to take advantage of the temperature stability of mica, glass, and asbestos. Silicone development has tended to lift the limitation that temperature has on motor design.

Silicones are synthetic products that cannot be considered wholly organic or inorganic, but which might be called semiinorganic. Sand is the principal raw material which is combined with chemicals from brine, coal and petroleum. The three general types, liquids, resins, and rubbers, have two common basic properties—high-temperature stability and moisture resistance. Composite insulation treated with silicone resins and varnishes is capable of withstanding total temperatures of 300° C. (572° F.) for limited periods, and has exceptional water and chemical-resistant properties. In addition to the varnishes and bonding resins, silicone lubricating greases and paints have been developed to withstand the high bearing and frame temperatures.

Silicone-insulated motors are finding wide usage in applications where temperatures are excessive, and rewinds with standard insulation are frequent. They are also being used in applications where severe moisture conditions are encountered. In addition to reliability, space and weight reduction may be effected, as is desirable for ship board applications.

Extensive tests have been made on silicone-insulated motors and they have proved themselves in actual operation. Although all indications are that the values are very conservative, the recommended hottest spot total temperature for Class H insulation is 180° C. (356° F.). The recommended total temperatures for thermometer and resistance or embedded detector measurements are 155° C. (311° F.) and 165° C. (329° F.), respectively.

Effect of Temperature on Insulation

The temperature at which a motor can be operated depends on the length of time it is expected to last. Failure is often produced by some mechanical stress due to the effects of time and temperature. The effect of temperature on insulation is a gradual physical deterioration with time, but there is no critical temperature at which failure occurs. This is more clearly brought out in Fig. 2. The life at any given temperature is variable; there is an appreciable span between minimum and maximum life. Failure will be determined by factors other than temperature.

It must be remembered that although temperature is an important factor, there are also others which affect the life of insulation. Mechanical expansion and contraction forces and pulsating shock loads, particularly on large machines, tend to reduce life. Exposure to oxygen, moisture, and chemicals tends to cause deterioration and reduction in life.

Experience has shown that the aging effect of temperature on Class A insulation doubles for approximately each 8° C. increase throughout the practical operating temperature range.

The temperature of a motor in operation is directly affected by the ambient temperature. Ambient temperature is considered as the temperature of the cooling medium. Most motor ratings are based on an ambient of 40° C. On this basis there is an appreciable margin in permissible temperature rise in many instances. Motors operate in ambients that vary over wide ranges but which are usually below 40° C. most of the time. The total percentage of time during which 40° C. is exceeded is usually very low. Records show that the percentage for the outdoor ambient over the entire United States is less than 0.5 per cent. The percentage is some-

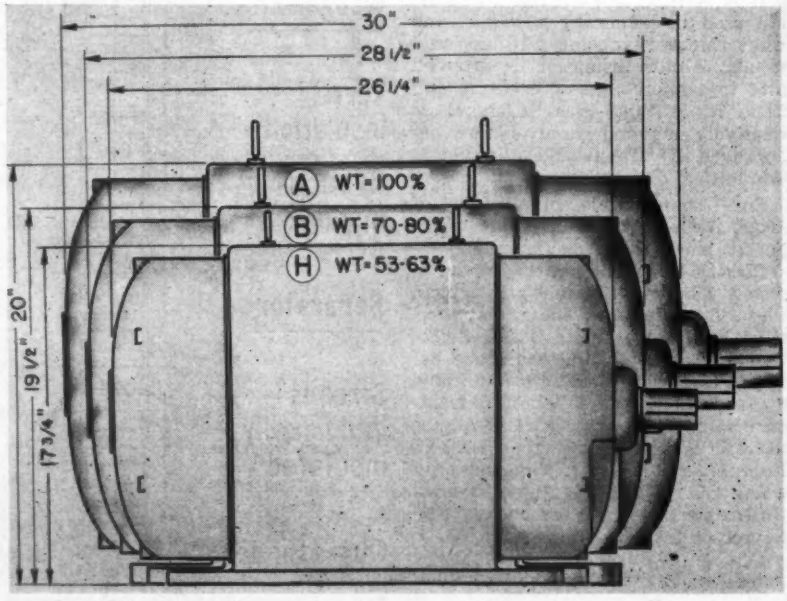

Fig. 3—Illustration of possibilities in weight reduction in small induction motors

what higher for some indoor applications where considerable heat is generated by equipment.

Many producing fields and refineries are located at high altitudes. No correction is required for altitude if it does not exceed 3,300 ft. above sea level. Cooling is adversely affected by altitude, but the normal ambient temperature at high altitudes is low. Usually the increased heating is offset by the low ambient temperature. On the basis of a 40° C. ambient temperature for 3,300 ft. and below, the ambient at 6,600 ft. would be 35° C. and at 9,900 ft. 30° C.

On motors which are rated on a continuous-operation basis, the temperature rise is based on a continuous ambient. If satisfactory life can be expected under these conditions, then equal life can be expected if ambient exceeds 40° C. for short periods but stays under 40° C. (104° F.) most of the time. There is ample margin provided by the use of 40° C. as a standard ambient. This makes it possible in sections, where ambients are comparatively high, to expect normal life out of standard motors, on the basis of temperature only.

Total Temperature Final Criterion

It must be borne in mind that it is the total temperature which is the final criterion. Ambient temperature and temperature rise may be varied under different conditions, but their total must not exceed limiting total temperature for the class of insulation being used.

The fact that a hand could not be held on a machine has often been the cause for alarm that the machine is running too hot. This is not necessarily true. A Class A machine operating at its permissible winding temperature of 90° C. may have a frame temperature of approximately 75° C. (167° F.). A Class B machine with permissible winding temperature of 110° C. may have a frame temperature of 95° C. (203° F.). Temperature at which a hand can be held on a frame will vary with the individual but normally it can be 70° C. (158° F.) for only a few seconds.

In discussion of the insulation classes, it was pointed out that Classes B and H have better heat stability. However, there is no point in using these materials in order to operate at increased temperatures unless definite benefits can be derived. There are several ways to take advantage of the increased thermal life of high-temperature materials.

In applications where a premium is placed on continuity of operation, it may be desirable to operate at standard temperatures in a standard frame in order to obtain increased life and reliability. Whether Class B or Class H materials would be used depends upon the importance of the application.

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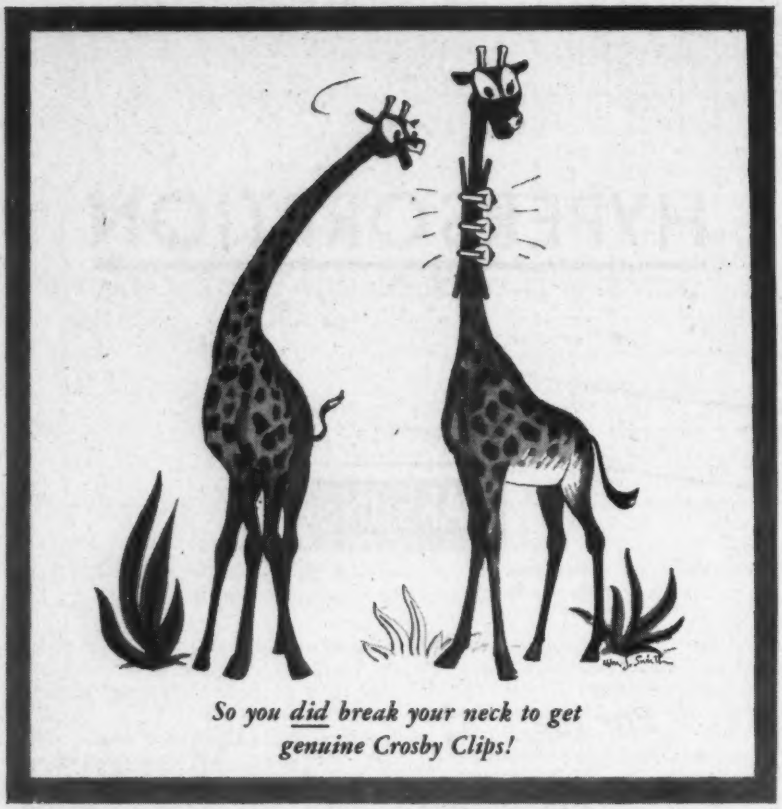

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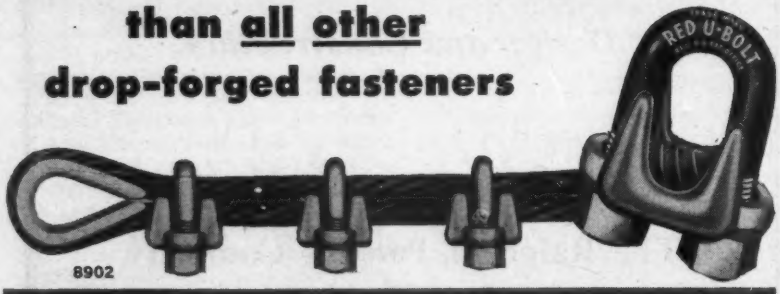

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prolonged overloads which seriously shorten their life. High-temperature insulation will permit greater overloads for longer periods. The frequency and extent of overload will determine the type of insulation used.

Higher operating temperatures offer the possibility of reducing the size and weight of a given machine. It must be remembered that required performance may determine the size of a machine, and high-temperature materials will have no advantage from the standpoint of size. That is, the performance characteristics would require a machine large enough so that it would not exceed Class A temperatures. A reduction in size and weight may be accompanied by an increase in losses and excitation and a decrease in torques, starting kva, and power factor, therefore careful consideration is given in design.

Fig. 3 shows graphically the possible weight reduction in small induction motors. The reduction in weight by going from Class A to Class B is approximately 20 per cent. Another 20 per cent reduction can be obtained by going from Class B to Class H. It must be remembered that this is done only when weight and size are at a premium and performance characteristics are not influencing factors.

Conclusion

The art of electrical insulation is continually advancing. As industry develops new applications, insulating materials and processes are developed to give windings satisfactory life. Class A materials, specially processed where necessary, are satisfactory for most applications. Where higher temperature operation or added reliability is desired, Class B insulation is used. The development of silicone resins and varnishes makes it possible to operate at still higher temperatures and with greater reliability. Ability of Class B and Class H materials to operate at high temperatures makes reduction in size and weight possible. Performance characteristics, however, are adversely affected and must be closely considered in design.

BOOKS

THE ELECTRON MICROSCOPE. By Dr. D. Gabor. Published by The Chemical Publishing Co., Brooklyn, 164 pp. $4.75.

This book is both an introduction to the use of the electron microscope and a critical contribution to its theory. All constructional details are given and the preparation of specimens discussed. An important feature of the book is the indication of future possibilities and trends of this comparatively new instrument. The "commercial" electron microscopes such as the R. C. A. magnetic (type B) and desk models, as well as the German, British, French, and Dutch industrial types are discussed in detail. The fundamentals of electron optics explained here should enable medical, biological, and chemical workers, who have no theoretical acquaintance with electronics, to understand the basic operation of the instruments described in the book.

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Mene Grande Develops New

Completion Technique

Casing Centralizers and Scrapers Aid In Eliminating Faulty Cement Jobs

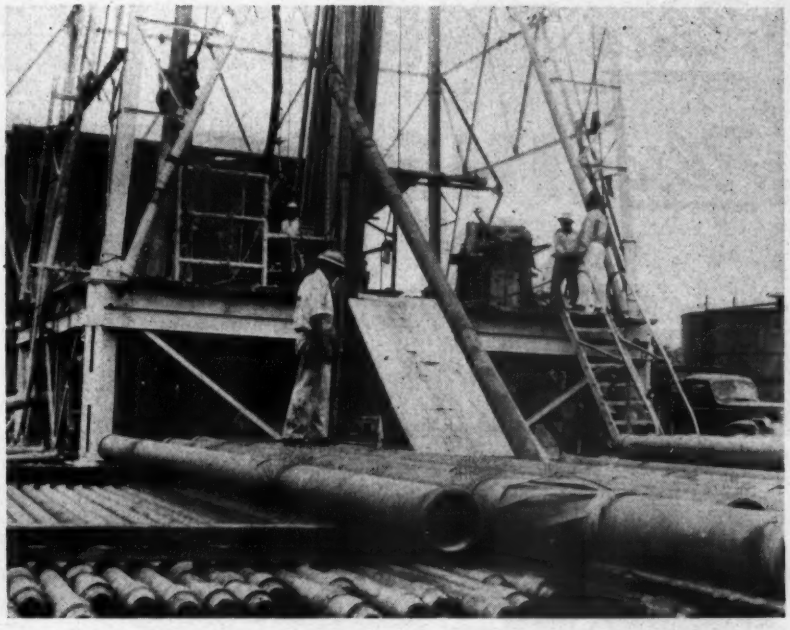
by D. H. Stormont

TO reduce the time required for cementing operations and to assure a more homogeneous column of cement throughout the oil-producing section, Mene Grande Oil Co. during the past year has adopted use of casing centralizers and well scratchers for almost all of its oil-well completions in Eastern Venezuela. Except in those cases where available perforating facilities failed to obtain effective penetration, completion time has been reduced to an average of about 5 per cent of drilling time to the casing point. When using standard squeeze techniques, cementing time in the multipay fields of this area all too often was equal to total drilling time. Furthermore, adoption of this technique has resulted in about 90 per cent of completions producing clean oil without the necessity of isolation squeezes.

Oil fields in Eastern Venezuela generally are characterized by their multiplicity of oil-producing sands and long producing sections. In the Oficina area, for example, there are some 65 oil-producing sands extending throughout a vertical interval of about 3,000 ft. Oil zones within this section vary from almost zero to 350 ft. Dual and triple-zone completions are quite common, but in many well bores it is desired to isolate some sands for production at a later date.

Heretofore, Mene Grande's general practice was to use two-stage cementation on all wells having long oil sections, then employing squeeze cementing to insure shutoffs at critical points in the producing section. In some wells as many as four or five isolation squeezes had to be made to secure an effective shutoff of an oil-producing interval. With the time of a heavy rig worth $1,500 per day and new wells having an average potential of 400 bbl. per day, these delays in completing a well proved quite expensive in some instances.

Use of spiral centralizers and reversible scratchers on the production casing was adopted for the following principal reasons: (1) The scratchers remove all filter cake from the well bore, thus permitting the cement to make intimate contact with the formation. (2) The centralizers cut through tight areas, permitting the casing to be centralized in the well bore and thereby assuring a more or less concentric ring of cement completely around the casing. (3) Both the centralizers and scratchers provide a means for kneading the cement when the casing is worked up and down, eliminating channeling and assuring a homogeneous cement column.



Pulling a joint of scratcher-equipped, 9⅝-in. casing into the derrick at a well in San Joaquin field of Eastern Venezuela

In addition to using scratchers and centralizers, the method involves running of caliper surveys to determine the hole size throughout the section to be cemented. It also involves the running of temperature surveys to determine top of the cement column. Once the average volume of cement required per foot of section to be cemented is determined for a particular field, however, caliper and temperature surveys are run only as an occasional check.

Also, because of difficulties encountered with conventional cementing heads, a new type was developed which permits reciprocation of casing while circulating and cementing.

For the first 65 wells completed in this manner by Mene Grande, there were only 15 "mechanical failures" (i.e., the intervals were oil productive but for varying mechanical reasons the cement job was not successful). Completion of these 65 wells involved the testing of 230 intervals, or an average of about 3.5 intervals per well. Thus in 90 per cent of the tests made in the 65 wells, the true fluid content of the intervals was considered to have been produced. Results of a few typical completions are given in Table 1.

Preparing Casing

The scratchers and centralizers are installed on the casing while it is still

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150	15	3000	400
200	20	3000	550

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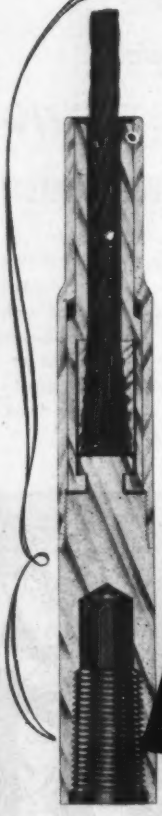

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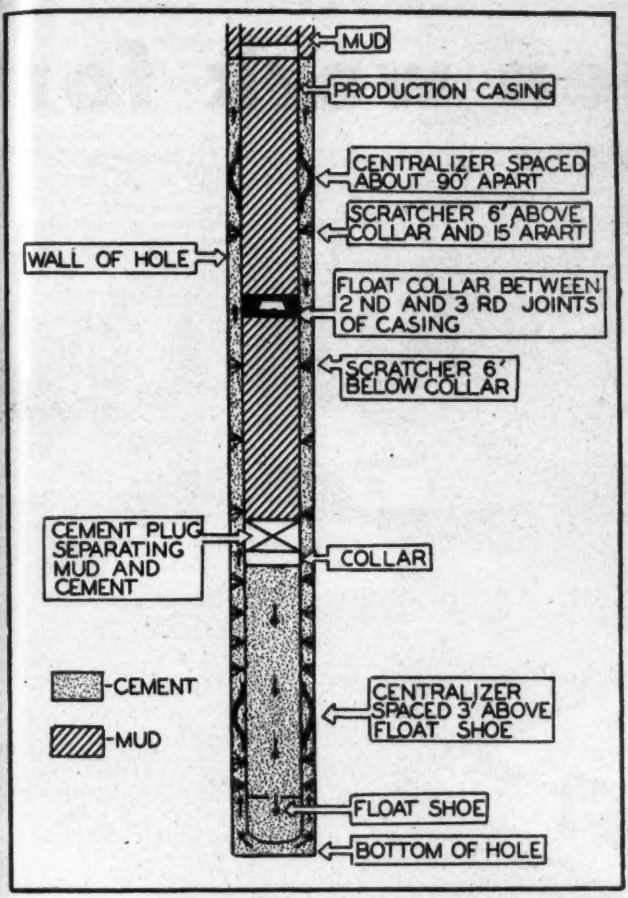


Above: Shown in the foreground is the new cementing head developed during experimental work at San Tome for use with scratcher-centralizer equipped casing. In the group, from left to right, are: J. E. Hall, president of Weatherford Spring Co., Weatherford, Tex.; D. H. Caddel, drilling superintendent for Mene Grande at San Tome; Bill Childers, shop superintendent for Mene Grande at San Tome; and A. J. Teplitz, research engineer for Gulf Research & Development Co., Houston

Left: Schematic drawing at left shows how the scratchers and centralizers are spaced on the float-shoe joint, and the location of the float collar

on the pipe rack. Except for the casing-shoe joint, reversible scratchers with 5-in. bristles are installed at intervals of not more than 15 ft. throughout the portion of the casing string which will be cemented. These are installed so that they will come not closer than 6 ft. to either end of the joint to allow space for using elevators, spinning ropes, and slips. This spacing also allows for the installation of centralizers at any place in the pipe string. Lugs are welded to the casing about 1 ft. from either side of each scratcher to confine travel to a distance of 2 ft.

Centralizers are installed not more than 90 ft. apart, preferably near the bottom end of every other joint. For 7-in. casing four welds of about 2½ in. each are used to weld the lower collar to the casing. The upper collar is not welded to the casing but is held in tension by means of diameter controlling lugs welded to the casing and fitting into slots in the top collar.

Since the casing-shoe joint is the key joint in the string, additional scratchers are placed on it. Two scratchers are installed about 1 ft. apart immediately above the shoe. A centralizer is then placed 2 ft. above the shoe and the bottom collar completely welded to the casing. The upper collar is held in the usual manner. Three additional scratchers are then equally spaced between the centralizer and a point about 6 ft. from the top of the joint.

From experience Meneg has found it desirable to place the float collar as high above the shoe as practical, usually about two joints above. This allows ample volume for retaining within the casing any mud-contaminated cement which may result from the follow-up plug scraping jelled mud from the walls of the casing.

Mechanics of Completion

Prior to reaching total depth, a thorough check is made of all drilling equipment to insure against a mechanical breakdown while casing is being run. Special attention is paid to the drilling mud to assure that it is in good condition, and of low viscosity and water loss. Upon reaching total depth, the hole is then calibered and the centralizer-scratcher equipped casing is run in a normal manner. On rigs equipped with spider-type slips, or other types which do not permit the scratchers and centralizers easily to pass, hand slips are used until this portion of the string is in the hole.

While casing is being run in the hole, "progressive circulation" is employed; i.e., after each 800 ft. of casing is added to the string, running operations are halted while drilling mud is circulated. These halts to circulate, and at the same time reciprocate the casing string, aid the operation by:

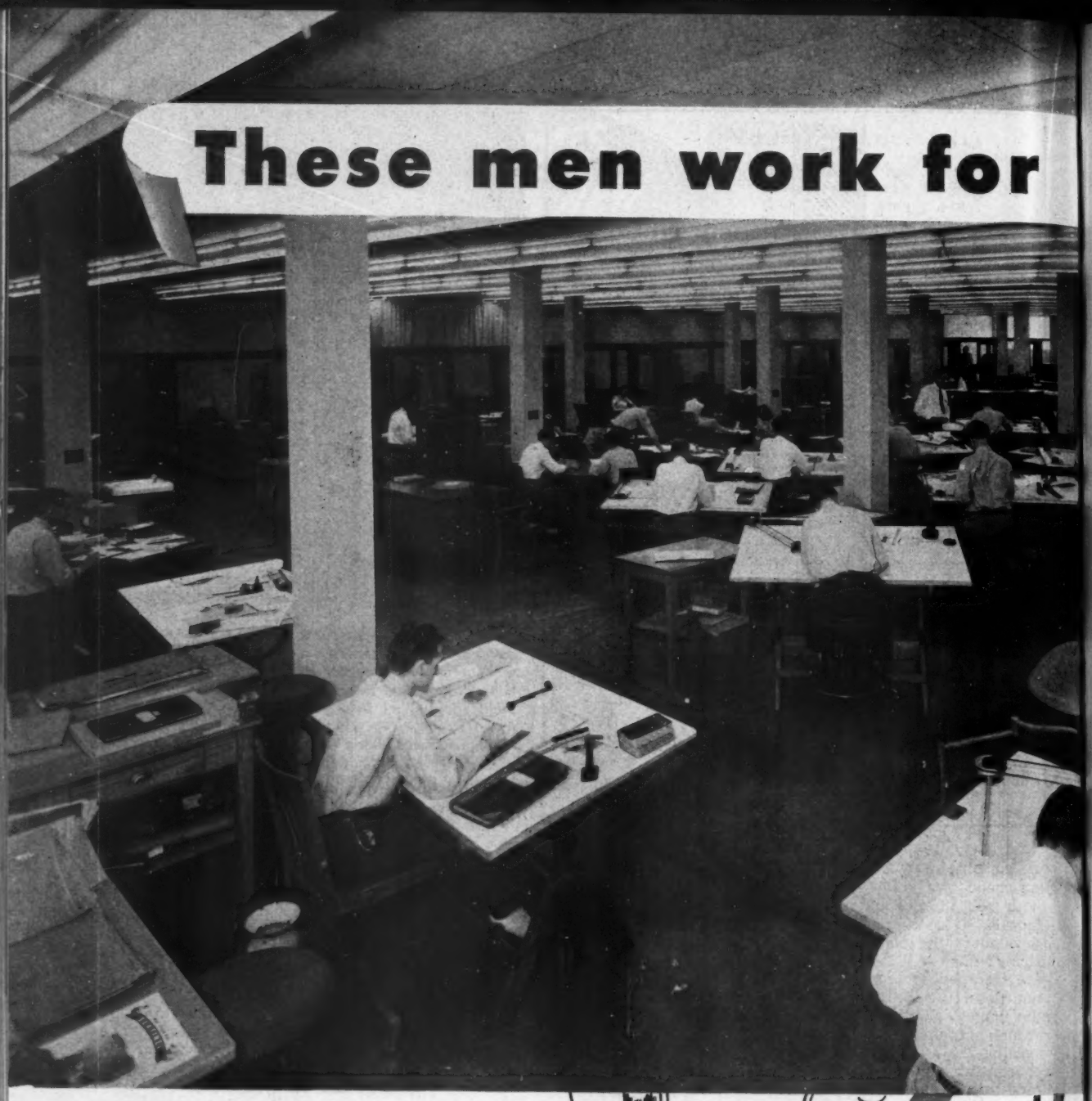
1. The mud is conditioned by the 15 to 30-minute circulation periods at each 800-ft. interval. Heavy mud can be lightened to the desired weight, and gas-cut mud can be treated to restore weight.

2. Possibility of the hole bridging is lessened as any loose accumulations of cuttings are progressively circulated from the hole. Likewise any materials scraped from the walls by the action of the centralizers and scrapers are circulated out rather

TABLE 1—RESULTS OF TYPICAL COMPLETION IN EASTERN VENEZUELA

Area—	Casing depth, ft.	Top scratcher depth, ft.	Est. cement (sacks)	Cement used (sacks)	Per cent plus or minus	Top of cement, ft. temp. surv.	No. intervals tested
Guara	5½-in. at 7,056	4,000	1,906	1,197	—36	4,830	3
West Nipa	7-in. at 7,830	4,750	1,263	1,600	+27	5,000	4
Oficina	7-in. at 6,370	3,209	1,171	950	—18	3,680	7
East Nipa	7-in. at 9,382	7,168	962	1,300	+35	6,650	5
Santa Barbara.	5½-in. at 6,667	5,800	217	450	+107	4,700	6
Santa Rosa....	9⅞-in. at 7,282	1,482	3,200	3,700	+15	no survey	4

These men work for



than allowed to accumulate in the hole. Thus when total depth is reached the time required to establish the circulation of clean mud is greatly reduced by this procedure.

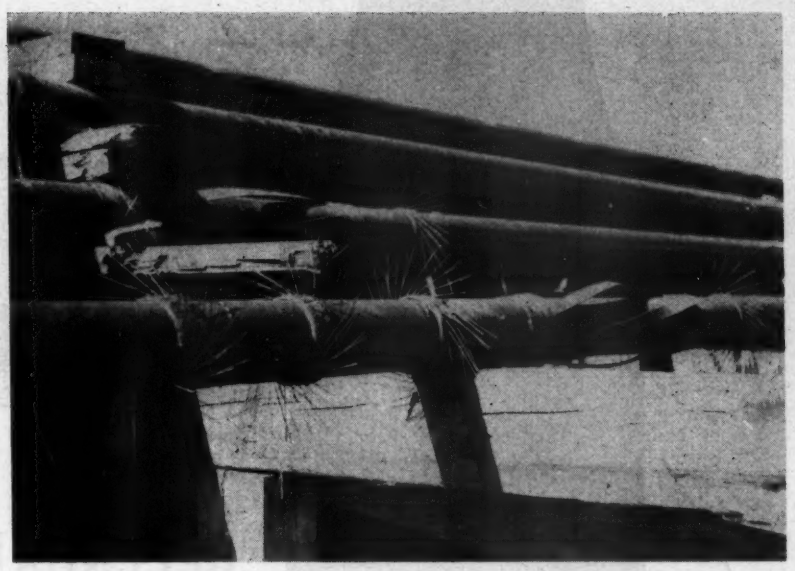
As soon as the casing string is in the hole, and while the fill-up head is being installed, the string is picked up with the elevators and raised and lowered slowly over a distance of about 4 ft. This reciprocation is continued while the pipe is being filled by the mud pumps and until mud circulation is established. The time consumed in running casing allows the drilling mud to thicken, and the scratchers and centralizers scrape mud and cuttings from the well bore, so that there is danger of circulation being lost. Thus it is important that mud circulation be continued until the circulation pressure indicates the mud column has become equalized. Working of the casing over a 4-ft. distance during this period assures that the pipe string is free.

While the cementing head is being installed the casing is again set in the slips. It is then restored to the elevators and slow, 4-ft. reciprocation resumed until free circulation has been established. Once this is obtained, the length of movement is increased to a distance about 3 ft. greater than the average length of joint of casing in the string. This raising and lowering of casing, requiring about 1½ to 2 minutes per cycle, and circulation of mud are continued for a period of at least 2 hours—or until the mud returns are free of mud cake and cuttings.

The calculated volume of cement that would be required to fill the annulus to the top of the producing section (or opposite the topmost scratchers) is mixed, the plug released, and cement started down the casing. To assure the cement being placed in the minimum time, two cementing trucks are employed for wells where 1,000 to 1,500 sacks of cement are used. For normal jobs the rig pumps are used for pumping mud and one truck is used to pump water. If the pressure builds up too high for the mud pumps, the second cement truck is then put to work.

The casing string is still continually raised and lowered all this time, the action of the scratchers and centralizers acting to prevent the cement from channeling. If the volume of cement used is in the order of only 500 sacks, long-stroke, slow reciprocation is maintained until the follow-up plug reaches the float collar. Or until the cement begins to set—as will be shown by weight indicator.

Where long sections are to be cemented, the time required may be so long that the cement may begin to jell before the plug reaches bottom. In these cases the distance which the casing is raised and lowered is shortened to around 15 ft. soon after the last of the cement is started down the casing. Rate of reciprocating the casing is somewhat faster than when the long strokes are used, and is stepped up even more as the cement is displaced.



Portion of the float-shoe joint, equipped with centralizer and scrapers, prior to being run in a Mene Grande well in Santa Rosa field of Eastern Venezuela

The two principal reasons why the more rapid, short strokes are employed are: (1) They assure that when the casing is brought to rest the bottom will be within the desired depth range, and the upper end will not be so far above the derrick floor as to interfere with removal of the cementing head. (2) They aid in preventing premature setting of the cement and in assuring complete displacement of the cement from the casing.

Because of the difficulties encountered in using the conventional cementing head, a new type was developed which permits continued reciprocation of the casing while the cementing plugs are being released. (See photograph). Fittings are provided so that from one to three cementing hoses can be connected below the follow-up plug, which is held in place by a screw releasing pin. The rotary hose is connected to the top of the head.

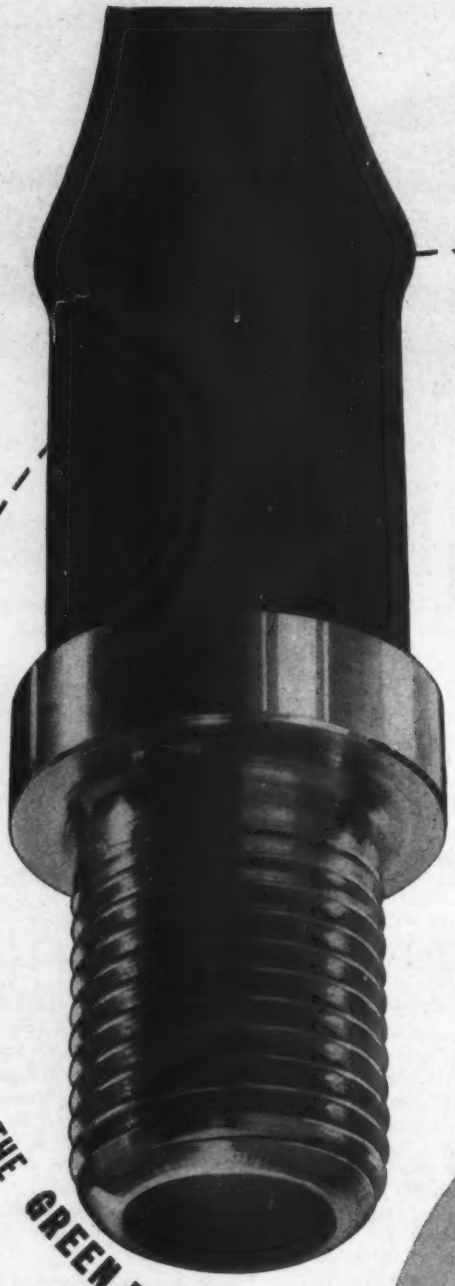
Only the lower hose (or hoses) is used during mud circulation and while the cement is being mixed. When the last five sacks of cement are being pumped, however, the plug releasing pin is unscrewed by means of a long chain on the chain hoist wheel that is attached to the releasing pin. Immediately—while the remainder of the five sacks are still being pumped — mud circulation is started through the upper hose and the plug pumped on down the hole without any interruption in the reciprocation of casing or flow of mud.

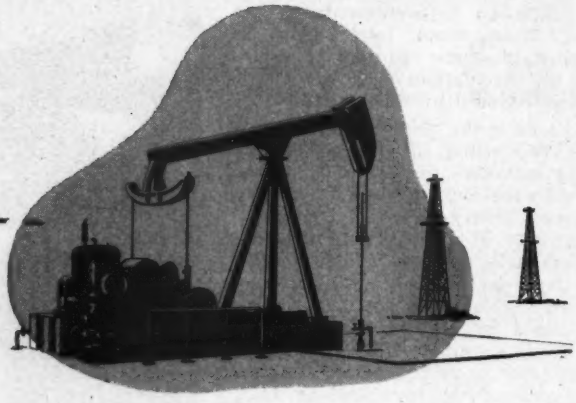
The entire plug-releasing operation requires only a few seconds, instead of the many minutes often required with the usual cementing head. Thus movement of the cement is not interrupted, nor is the working of the casing. Also, since two hoses are available greater volumes of mud can be pumped, resulting in faster displacement of the cement.

After all cement is displaced and the casing reciprocated as long as is deemed desirable, pressure is bled off and strain on the casing adjusted as accepted engineering practices require. Within 12 or 14 hours after the cementing job has been completed a temperature survey may be run to locate the top of the cement.

Mene Grande's general drilling practices in Eastern Venezuela call for either 5½-in. casing set in 8⅝-in. hole or 7-in. casing set in 9⅞-in. hole. Experience has shown that the volume of cement required to secure a satisfactory job is about the same for either program—usually from 1,000 to 1,500 sacks.

The hole caliper surveys were used as the basis for determining the volume of cement required and an arbitrary excess added to insure the cement column reaching the uppermost scratcher. However, comparison of the actual and calculated amounts of cement and the resulting cement top showed there was little consistency in the proper percentages of cement to be added to the calculated amount. (See accompanying table). In some wells a 16 per cent excess brought the top of the cement about 235 ft. above the top scratcher, while in others a 14 per cent excess resulted in the top being 825 ft. below the top scratcher. Therefore, Mene Grande has adopted the policy of using 20 per cent excess in areas where hole-size characteristics are not well known.





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WHY Supervisory Control Equipment

*by W. R. Tackaberry**

ONE of the most important features of any industrial installation is control of the equipment in that installation. Where the area in which the equipment is located is small, centralized, closely coordinated control is not a serious problem. It is easily obtained by a control center in which switches and instruments, directly connected to the associated equipment, are located.

But what of the installation where the groups of equipment are separated by distances not measured in terms of number of feet, but in terms of number of miles? A good example of this is the control of pumping stations on a pipe line. Here we can use supervisory control equipment to advantage. By means of it we can:

1. Completely control all the stations from one central point.
2. Have direct positive control of all functions in all of the stations.
3. Have continuous automatic indication of each controlled function.
4. Read any measured quantity at any station.
5. Know immediately and automatically any failure of any equipment at any station.

In short, by means of supervisory control equipment operating over a single pair of wires between stations, we are extending the control range of our operation from one local group of equipment, to many groups of equipment located miles apart.

Pioneered and proved by years of use in the electric-power industry, because of its economy and reliability, supervisory control equipment has found many applications in the transportation and industrial fields.

Supervisory control equipment has been rightly called the "remote control and indication" equipment of the power industry. Remote, in this case, relating to operation over areas the size of an entire state. Together with its partner — telemetering — a form of remote metering, it has made economically possible hundreds of unattended substations. By means of supervisory control equipment, one man can completely control a number of widely scattered outlying substations and have continuous automatic indication of all functions being supervised at those substations.

Reasons for Use

Perhaps the easiest way to answer the question of why we use supervisory control equipment, is to review briefly the problem of controlling a number of functions from one point. For purposes of simplification, let's use the circuit breaker as an example of the type of equipment we wish to control. The story will apply equally well to motor starters, valves, automatic control, or any other device or equipment that can be normally controlled by a switch.

In Fig. 1, we have a typical breaker control arrangement, with the breaker located near the point of control. Connecting the breaker and switch we have five wires, one each for: close, trip, red indicating lamp, green indicating lamp, and common return, as used in the usual control circuit.

Now, instead of controlling just one breaker, let's expand and make it 10 breakers to be controlled. That is what we have in Fig. 2. Here, using one common return control wire for all breakers, each breaker will require four additional wires—close, trip, red, and green. In this case, a total of 41 control wires will be required.

Now, suppose instead of from a point only 50 ft. away, we want to control our 10 breakers from a point 10 miles away. One of the first things we have to do is to add sensitive auxiliary relays out at the breaker end of the line. This would be necessary because the large voltage drop in the line due to the relatively high line resistance would make it impossible to close or trip the breaker directly, at rated control voltage. Fig. 3 shows such an arrangement, the auxiliary relays being used to operate the breakers from a control power source located nearby.

But, installing 10 miles of 41 conductor cable is a pretty expensive proposition. How can we reduce this expense? The answer that first sug-

*Switchgear specialist, General Electric Co., New York.

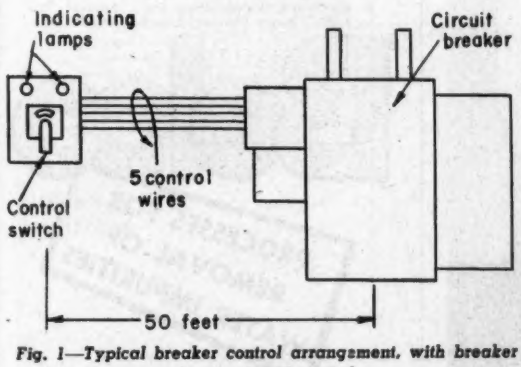

Fig. 1—Typical breaker control arrangement, with breaker near point of control

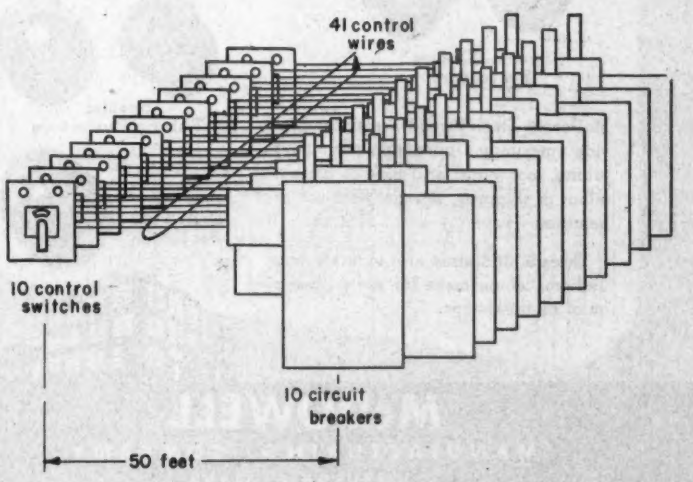

Fig. 2—Controlling 10 circuit breakers, with breakers near control point

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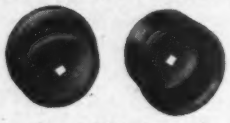

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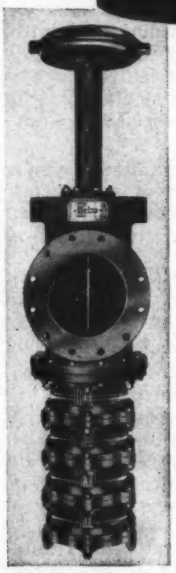

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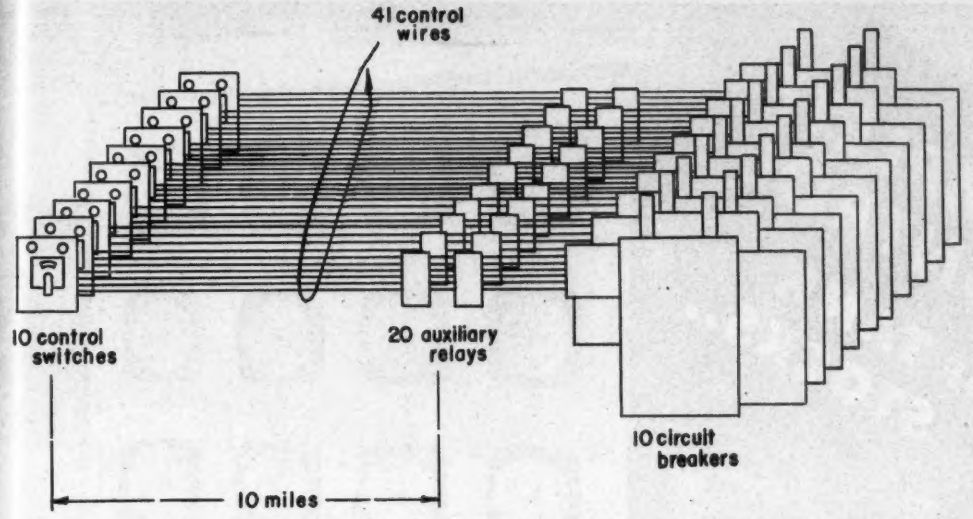

Fig. 3—Here 10 circuit breakers are controlled from a point 10 miles distant. Note use of auxiliary relays

gests itself, is the use of some sort of selector arrangement between the two points, connected by only five wires. Such a selector would connect the control switch to be operated with its corresponding breaker. This is shown in Fig. 4. With a common return wire, it is only necessary to switch the close, trip, red and green wires for the breaker we wish to operate. The selector is shown in position to operate breaker No. 9.

In order to keep the selectors at both ends of the line in step, so that the selected control switch will be connected to the desired breaker, some type of "stepping" or coding scheme will be required. When we adopt this type of operation, we are really using a code—made up of pulses—to select the breaker to be operated, and then, use direct operation for close, trip and indication.

As long as we are going to use coding for selection, why not go one step further and use it for operation and indication as well? When we do this, the number of interconnecting wires can be again reduced—this time only two will be required, as shown in Fig. 5. Also, by using code groups for all functions, we avoid the danger of false operation possible with direct wire control over long cables, due to cable currents produced during system disturbances.

We have now materially reduced the expense of remote operation for this 10-mile installation by reducing the number of conductors necessary for the operation of these 10 breakers from 41 down to 2. Let's examine the coding equipment that makes this possible.

The coding equipment at both ends of the line consists of a number of telephone-type relays, chosen because of their low current requirements, compactness, and long life—so connected that a selection or operation at one end of the line is automatically translated into a definite code group of pulses with long and short intervals, which when received at the other end, is automatically retranslated into the desired selection or operation. Of course, the code group is different for each selection point.

All coding and decoding is done automatically. To trip breaker No. 5, it is only necessary for the operator to select No. 5 point by pulling its select key and press the common trip button after the select lamp shows that No. 5 point has been selected. As soon as the operation is completed, it will be shown by the change in indicating lamps from red to green.

We now have the basic equipment, but what important features should we include in our design? Our most important aim is to make the equipment foolproof. It could be very embarrassing to have the operator try to close breaker No. 5 and out at the substation have breaker No. 8 close instead. In order to avoid such a situation, we design our equipment so that when we operate any select key, a "checkback" code is automatically sent from the outlying station, indicating which point has been selected. This checkback must indicate the correct point has been selected before the close or trip code can be sent, to operate the breaker.

Another important feature is to enable the equipment to operate from both ends. If a breaker automatically trips out at the outlying station, we want to know about it right away. The equipment will immediately indicate this by sounding an alarm bell,

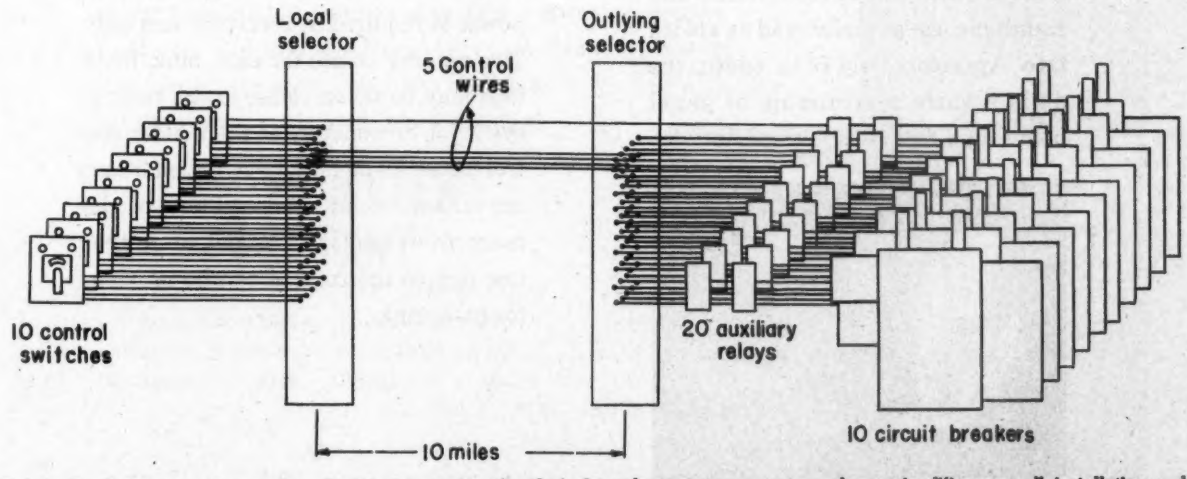

Fig. 4—On distant control operations (in this case again 10 miles), the selector arrangement as shown simplifies over-all installation and saves much wiring

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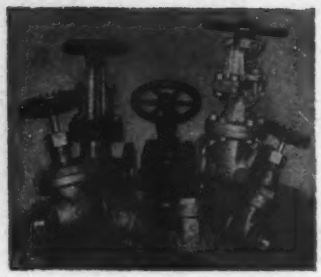

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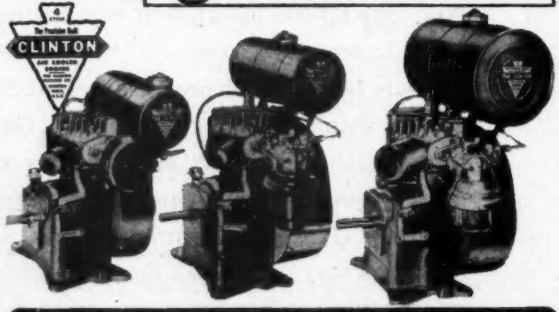

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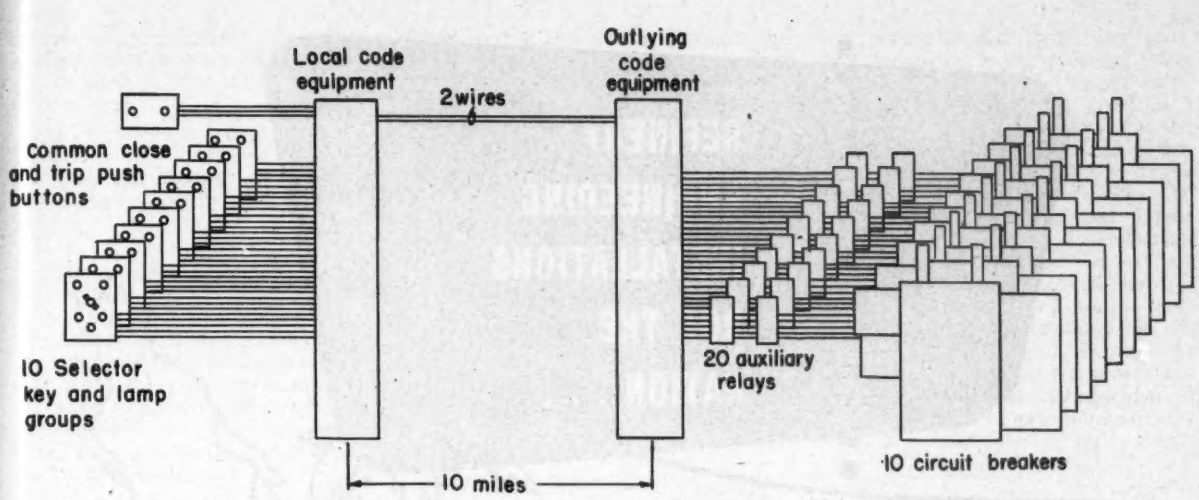

Fig. 5—In this case the control of circuit breakers over long distances (10 miles illustrated) is even further simplified and economized, per the two-wire channel

and changing the indicating lights over the select key of that particular breaker to the new indication.

We also want speed of operation. To meet this requirement, each operation takes on an average of from 2 to 4 seconds—the exact time depending on the size of the equipment. In addition, we want our equipment to be able to handle automatic operations occurring at the same instant. If there are simultaneous operations, they will momentarily be stored and forwarded in sequence by the equipment. To illustrate, assume three breakers at the outlying station trip out automatically at the same time. The true indications would be sent to

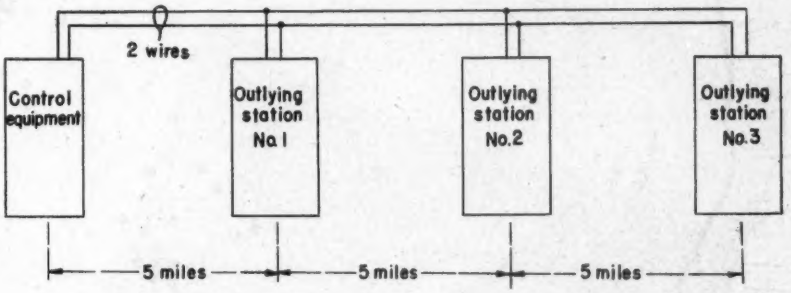

Fig. 7—Control equipment operating three outlying stations over one channel or a single pair of line wires

Fig. 6—(Left) Dispatcher's cabinet—automatic supervisory switchgear, 40-point code selector system. (Right) Substation cabinet for same automatic supervisory switchgear, 40-point selector system. (General Electric Co. equipment in Public Service Co. of Northern Illinois installation)

the control point, one after the other, taking approximately 9 seconds to change the three corresponding indicating lamps to the new correct indications.

Our equipment should also be designed to continually monitor itself for signs of trouble. To do this, we so design that if the line wires become shorted or broken, or if the outlying control battery voltage becomes low, an alarm will sound at the control point.

By building all these features into our equipment and making it completely automatic, foolproof in operation, compact, pleasing in appearance, easily installed and maintained, low in cost, and easy to operate, we have a supervisory control equipment that will meet today's rigid operating requirements.

To complete our operating picture, our requirements may be such as to need one other important factor—instrument readings. These are easily obtained by the addition of telemetering equipment. If only selected intermittent telemetering readings are required, under certain circumstances it is possible to use the same pair of wires for both supervisory and telemetering. It is generally recommended, however, that for a number

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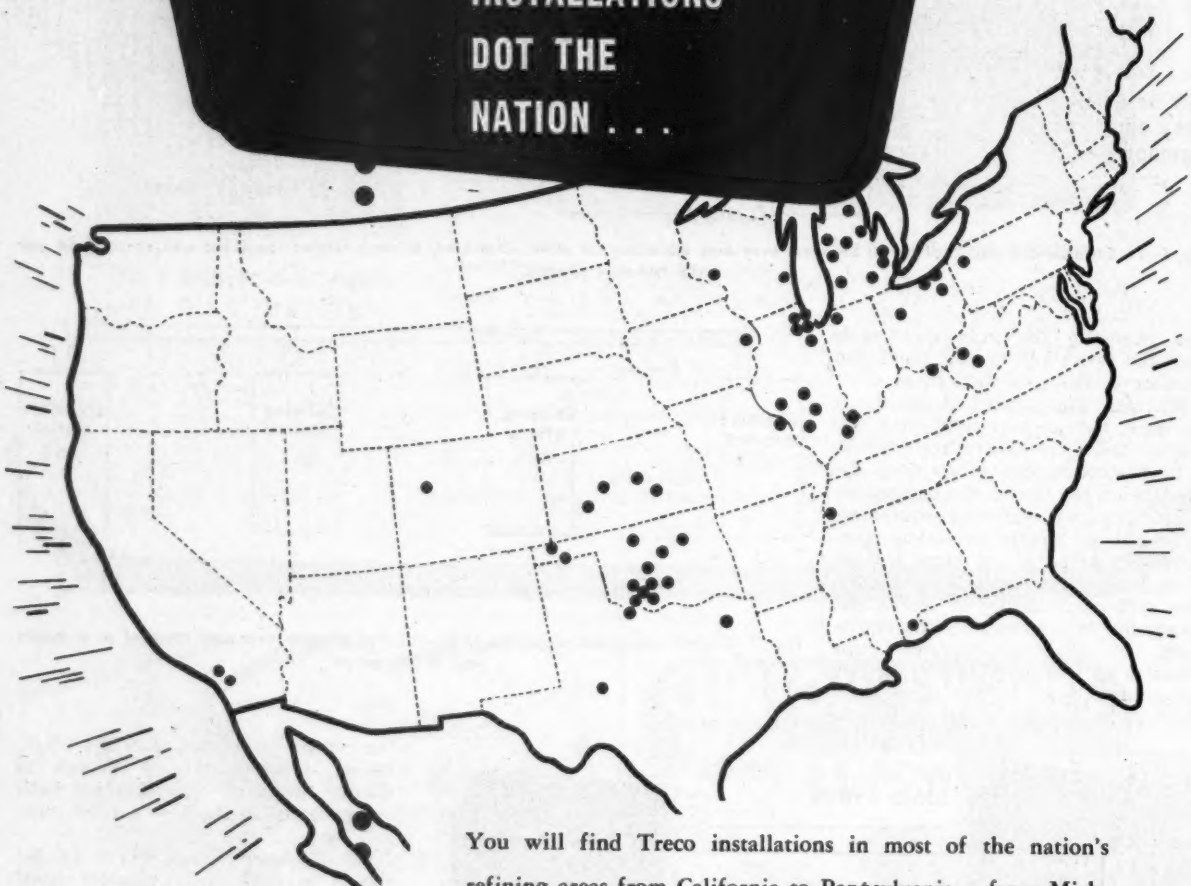

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of intermittent selected telemetering readings, one additional pair of wires can be used, so that we have a total of four wires.

Fig. 6 shows a photograph of a typical supervisory control equipment, similar to the one which we have developed in the preceding paragraphs.

So far, we have considered only intermittent selected telemetering readings, which require one additional pair of wires. In some cases, operating requirements may be such as to require continuous telemetering readings from the outlying station. This condition can be easily satisfied by the addition of a separate pair of wires for each continuous telemetering reading required.

We have considered the equipment for both the control and outlying locations; now let's examine the interconnecting lines between these two points. For purposes of simplicity, we have so far considered the lines as pairs of wires. Actually, the interconnecting channels can take several forms. They may be cables consisting of twisted pairs enclosed in a shielding lead sheath. Such cables may be installed by the user of the equipment, or they may be lines leased from the telephone company. Another form may be open line wires mounted on the same structures as the power line, and adequately protected from electromagnetic induction.

In considering the type of channel we will use, we should remember that a number of outlying stations can be operated over the same channel, or pairs of wires. Fig. 7 shows one control equipment, with three outlying stations operating over a single pair of line wires.

All of the above factors should be considered before making the final selection of the type of channel to be provided for a particular installation, in order that the most economical means of connecting our control and outlying equipment may be selected.

Sometimes, in the application of supervisory control equipment, there is a feeling that this type of equipment is too complicated. There is no question that to sit down and design an equipment from the ground up that will control, for example, 40 operations over a single pair of wires, be rapid and foolproof in operation, and correctly indicate automatic operations, is no easy job. But, on the other hand, if we leave that worry to the manufacturer, who backed by years of experience in this field is well able to handle it, only the relatively simple problems of proper application and type of channel to be used remain.

As we have seen from the development of the "remote control" equipment, aside from the selection of channel, the application of supervisory control equipment is very much the same as the application of local control equipment. In much the same way, it is necessary to determine the number and types of operations, both present and future, to be performed. These operations can be classified as follows:

1. Control and indication.
2. Control only.
3. Indication only.
4. Telemetering.
5. Communication.

All of these functions can be readily handled by standard supervisory control equipment. The number of channels connecting the equipment will be determined by the type and number of functions required.

Having reviewed our remote control problems and found our solution, the answer to the question, "Why supervisory control equipment?" comes down to this: "It provides a simple and economical solution to the problem of remote control." In power systems, large and small, we have put scattered substations under the complete direct control and supervision of one operator. In industrial applications, supervisory control equipment has proven to be the answer to the problem of control locations where accommodations for operators are not practical. In pipe-line pumping stations, this equipment has made possible the economical control of a number of remote pump motors from a central location miles away.

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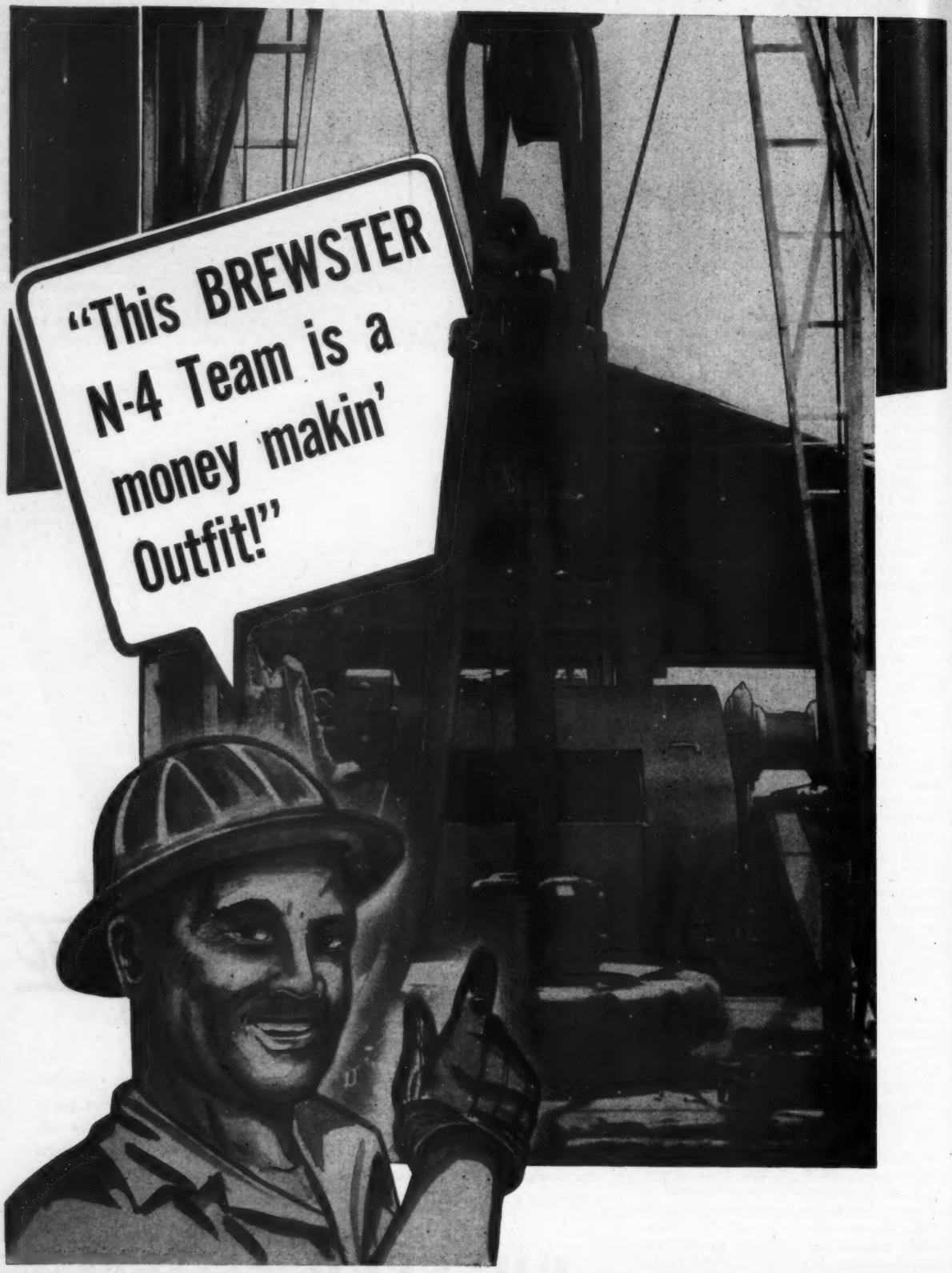

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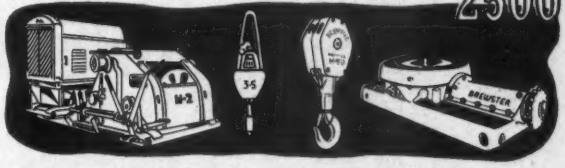

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Nation's Largest Voluntary Unit

(Continued from page 86)

pages were required for the agreement. Most of this space was occupied by a description of the leases and mineral fee lands.

$2,250,000 Job in Progress

For efficient operation under the unit plan, Abercrombie currently has under way a $2,250,000 construction program. This program includes revisions and additions to the flowline gathering system, absorption plant and separator stations, and installation of crude-oil and distillate stabilization facilities.

Revisions to the two existing central separation stations are being made to allow all wells in the field to be tied into these stations. The gas-distillate wells will go directly to the plant and the oil wells will produce through individual multi-stage separators. Gas from the oil wells will go to the plant in four pressure systems for processing, and the oil will go to the plant under pressure for stabilization.

Production from each well will be individually metered at the central stations. Storage will be in three floating-roof tanks to minimize evaporation losses.

The improved separation facilities are designed to: improve oil and gas measurement, obtain adequate safety of operations, increase operating efficiency, and to eliminate evaporation losses which amount to several hundred thousand dollars annually.

Some drilling activity continues in the field. The operators feel that there are still many unknowns with regards to the reservoir and the drilling is designed to solve these unknowns. The newly formed unit has two rigs running in the field and several rigs are in operation on the outskirts. Two workover rigs are kept in continuous operation to take care of a serious corrosion problem and provide improved well locations for exploitation of the oil rims

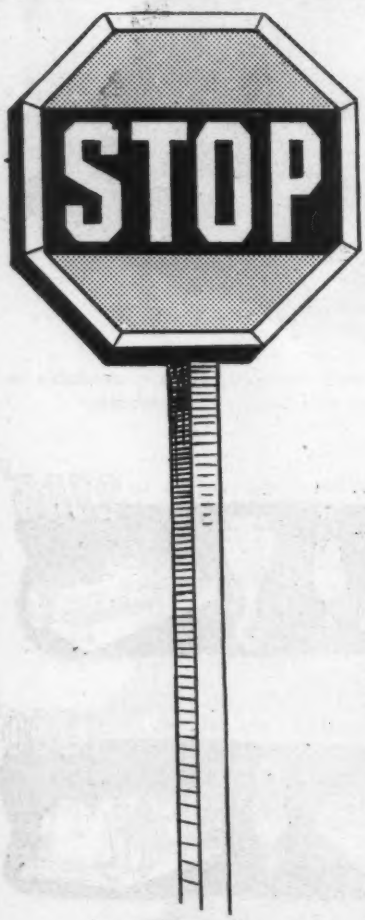
Field Discovered in 1934

On November 8, 1934, J. S. Abercrombie Co. and Harrison Oil Co. completed their 1 B.R.L.D. well in the Frio sand at 8,626-651 ft. to open Old Ocean field. The discovery of the four known major reservoirs, all of which are a part of the Frio formation, was made by September 1938.

Initial drilling development was slow with only one well completed in each of the first 3 years. This was due to the fact that Old Ocean was one of the first deep, high-pressure fields. It was in these early years that the equipment and practices necessary for the drilling of high-pressure wells was developed. Much of this type of equipment was developed in Old Ocean at this time by James S. Abercrombie, who was at that time the owner of J. S. Abercrombie Co. The field saw its greatest development period in the years from 1937 to 1941.

Gas injection to conserve the reservoir energy was instituted as early as 1938. J. S. Abercrombie Co. and Harrison Oil Co., owning almost all of the operating interests at that time, started the injection program with their joint interests operated by Abercrombie. This program conserved the major portion of the field's gas from 1939 to the present. However, as recent as September 1947, some wells in the field were still drawing heavily from the gas caps, and about 14,000 M.c.f. daily was being flared.

To date, 150 producers have been brought in, including 69 oilers and 81 gas-condensate wells. Eight wells are being used for gas injection in the pressure-maintenance program. The casing program in the field, with a few exceptions, has been as follows: 1,500 ft. of 13⅜-in. surface pipe; 7,000 ft. of 9⅝-in. for protection string; and 11,000 ft. of 7-in. o.d. pipe for the production string. Seventy per cent of the field's 161 wells have casing set in or below the Larsen zone which is the deepest proven reservoir. Hence, any of these wells may pro-



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duce from any of the major reservoirs, as necessity or desirability dictate. Standard completion practice has been to perforate the casing opposite the formation to be produced. Individual wells in the past have been largely completed in one or more members of a common zone. However, in future workover jobs it is contemplated to complete some of these wells into other producing intervals.

Field Prorated Since Discovery

Production from Old Ocean field was prorated by the Railroad Commission of Texas since production was discovered. The rules adopted at that time were for spacing of wells, casing programs, use of blowout preventers, surface equipment, handling and measuring production, and were very important in controlling hazards or safety of drilling and other operations. On October 8, 1939, a special order was issued and Rule 18 governing the production allowables of Old Ocean field was added. This rule also provided the acreage allocation for wells and further provided that the operator could elect to keep the well density to one well to 80 acres. Prior to the addition of rule 18 the allowable of the wells were assigned on a per-well basis depending upon potentials.

Under an August 14, 1941, special order, it was provided that no acreage could be assigned to a unit which was not reasonably considered productive acreage.

On September 2, 1942, a Railroad Commission rule established a daily gas limit of producing wells based on a maximum gas liquid hydrocarbon ratio of 2,000 cu. ft. per barrel. It also provided, with limits, that an operator could close in wells of high gas-oil ratio and transfer their allowables to wells of lower gas-oil ratios of the same lease. This rule limited the amount of gas being flared in the field considerably and to some extent limited the amount of liquid hydrocarbons produced.

The theory of retrograde condensation was being advanced in the early life of the development of Old Ocean field, and it was apparently the recognition of this phenomenon which prompted the Railroad Commission of Texas to issue the order on December 6, 1938, for the return of residue gas to the producing formations which in substance was as follows:

"It is further ordered that all operators of wells in Old Ocean field proceed with the installation of the necessary equipment to determine the feasibility of returning to the sands of the Frio formation of the field all residue gas produced by wells in the Old Ocean field which is not utilized under the provisions of House Bill No. 266." All gas produced with the condensate and oil, except that necessary for lease operations on leases of all companies in the field was being vented at the time of the Railroad Commission order of December 6, 1938. In compliance with this order, J. S. Abercrombie Co. and Harrison Oil Co. made plans for the construction of a gasoline absorption plant and compressor plant, designed for return of gas.

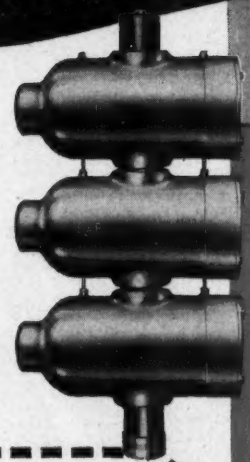
Key Abercrombie Personnel

Don Knowlton is president and M. R. Lents, vice president and general manager, of J. S. Abercrombie Co., unit operator of Old Ocean. Other key personnel include C. W. Shively, chief engineer, and Hillord Hinson, chief geologist, with offices in Houston.

Supervisory personnel of the Old Ocean district of the Abercrombie organization include: Ben H. Williams, district superintendent; W. J. Hagner, plant superintendent; A. E. Elliott, Jr., production superintendent; C. E. Daly, drilling superintendent; R. H. Martin, construction superintendent; and C. E. Burney, district engineer.

Cut surge, shock and vibration on mud pumps with

BAROID PULSATION DAMPENERS



Baroid Pulsation Dampeners absorb the shock and surge of all types of reciprocating pump installations, and more than save their cost by reducing damage to equipment and providing smoother, quieter operation. Some evidence even points strongly to the possibility that pulsation transmitted to the formation increases the chances of caving and lost circulation.

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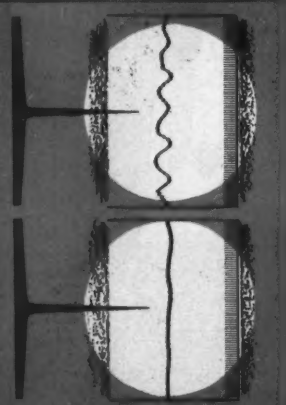
The cardiograph illustration at the right records the severe pressure shock of a 7¼"x14" duplex, double acting mud pump operating at 60 r.p.m. At this speed, pulsation varied from 793 p.s.i. to 302 p.s.i., producing a vibration impact of 491 pounds per sq. in. to every part of the system.



This recording was taken following the installation of a Baroid Pulsation Dampener. Note how the pressure line has straightened out. Reading remained at a constant 650 p.s.i.

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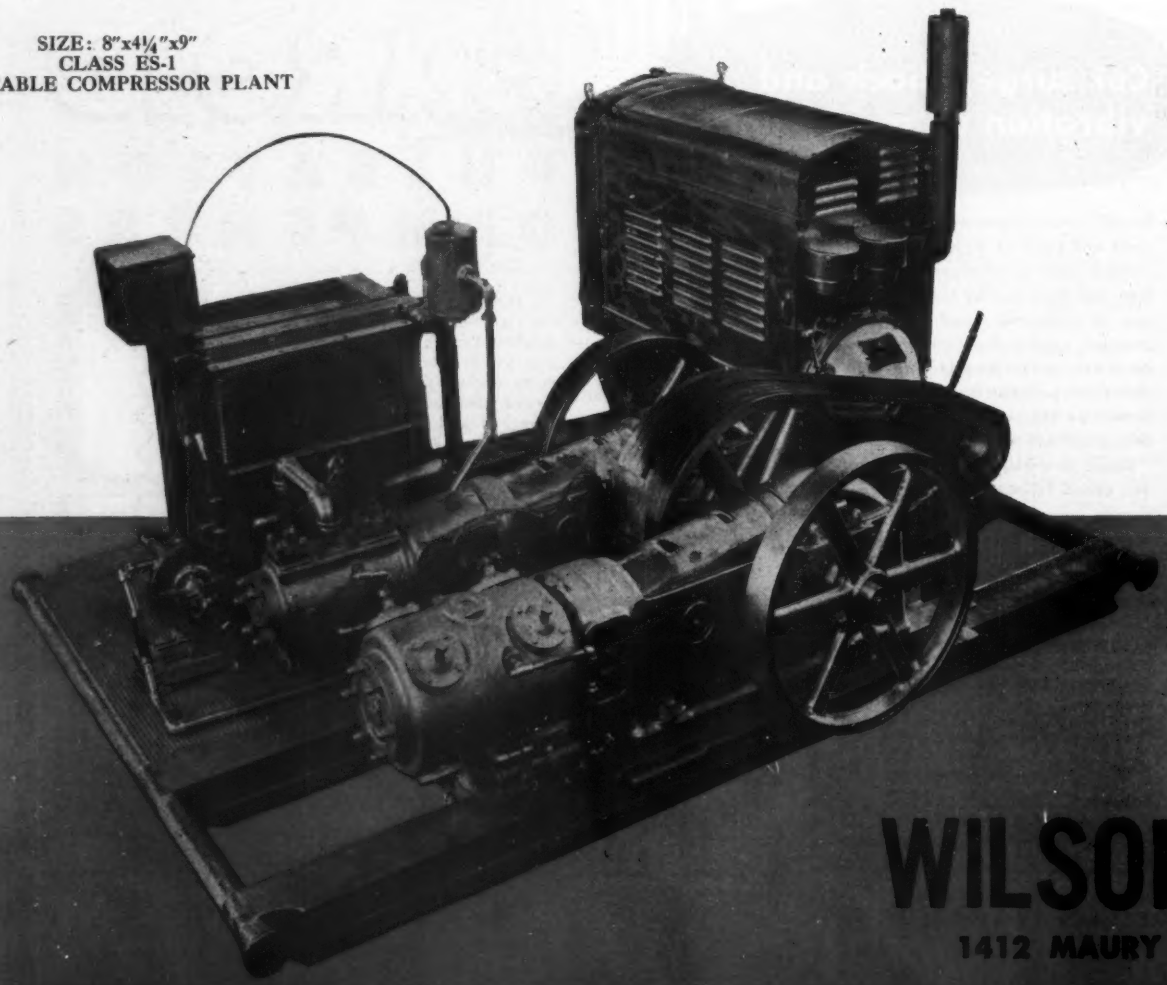

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Pictured in these two pages are both the "Single Stage" and "Double Stage" Wilson Supply Co. - Ingersoll-Rand "Packaged" Portable Compressors. Note their completeness:

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- *— Waukesha Engine with combination gas-gasoline carburetor, penn safety switches, clutch, radiator and fan housing, air filter, exhaust silencer, water pump, slide rails, complete electric starter with battery, oil filter, and top cylinder oiler*
- *— Complete V-belt drive including both driving and driven sheaves and V-belts.*
- *— Young-Happy radiator type cooler for compressor cylinder, and air-cooled coil intercooler complete with centrifugal circulating pump.*
- *— Gas intercooler coil complete.*
- *— Fuel gas pressure regulator and Volume tank.*
- *— All gas and water piping and fittings.*

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SIZE: 8"x9"
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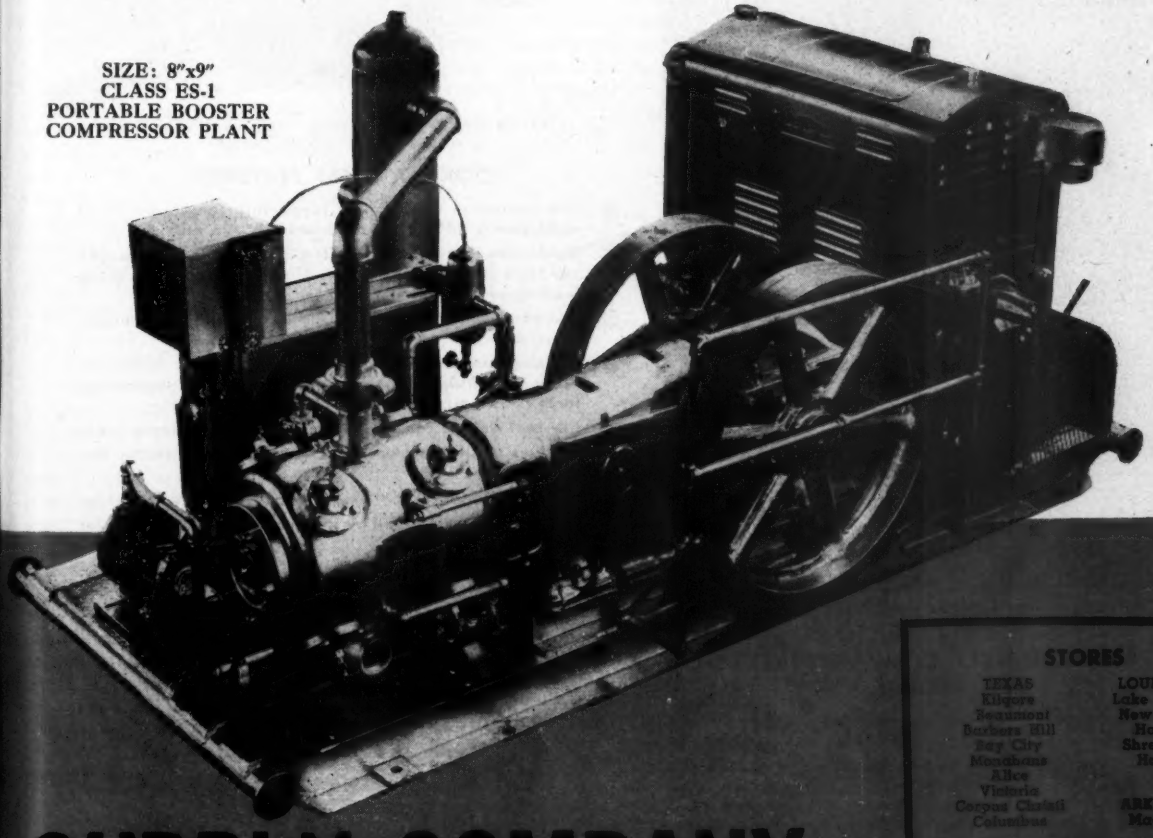
COMPRESSOR PLANT



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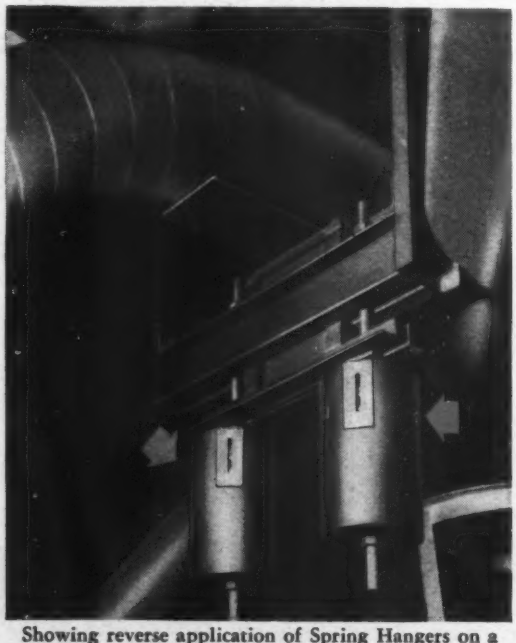

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- **Precompression* assures operation of spring within its proper working range where variation in supporting force is at a minimum.**
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- **Easy selection of proper sizes from simple capacity table.**
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Write for descriptive folder on Pre-Engineered Spring Hangers Fig. 268.

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GRINNELL

WHENEVER PIPING IS INVOLVED

Fundamentals of PIPE-LINE DESIGN

by Benjamin Miller*

This article deals with the physical mechanism by which a pressure gradient originates. Other factors under the general subject of pipe-line design have been discussed by the author in the Journal issues of July 8, page 81, and July 29, page 223. In the Journal's forthcoming Annual Pipe Line Number to appear September 23, Miller will present a comprehensive discussion of the relation of the basic kinetic theory of gases and liquids to the practical problems involved in pipe-line design—and deriving flow formulas and giving tests for validity.

THE pressure gradient is the central fact of pipe-line design. To supply the pressure consumed by the pipe line requires the operation of pumping stations, while the pipe is needed not only as a conduit to guide the flow but also as a structure to resist the pressure. Economical pipe-line transportation requires that the pressure gradient be minimized, to keep down the cost of pumping stations as well as the cost of the pipe.

Since the pressure gradient would be zero if there were no flow it is plain that the pressure gradient must increase with the flow rate. It seems reasonable to expect that for a particular oil and flow rate the pressure gradient will be less in a large-diameter pipe than in one of small diameter, and that in pipes of the size carrying different oils at the same flow rate the pressure gradients will be different. These expectations are realized through experience. Such qualitative ideas are not sufficient for design, but quantitative relationships are required so that the pressure gradient may be calculated. In developing such quantitative relationships, or formulas, it is helpful, if not essential, to have an idea of the mechanism by which the pressure gradient originates. Furthermore, the idea of eliminating the pressure gradient, or making a very substantial reduction in its value, is very attractive, and to assay the possibilities in that direction a mechanism is practically indispensable.

Consider the forces acting on a body of fluid bounded by the inside wall of the pipe and by two planes perpendicular to the pipe axis and quite closer together. Such a body of fluid is shown in Fig. 5. It is a cylindrical disk whose circular faces have the radius r_o, and its length is Δx. On the upstream face of the disk the pressure is p, while on the downstream face the pressure is $p + \Delta p$. The area of each circular face is πr_o^2, so that there is a net force acting to accelerate the disk in the flow direction, which amounts to $\pi r_o^2 \Delta p$.

Assuming as before that the fluid is an oil having extremely small compressibility, and that the flow rate is constant, the disk is not being accelerated. There must therefore be a force acting on the cylindrical surface of the disk, in the upstream direction. Since the force acts along the surface in the direction opposite to the flow, it may be considered a friction; or the two forces acting along the surface may be considered as the product of the area and the shear stress. The area of the cylindrical surface is $2\pi r_o \Delta x$; denoting by τ_o the force per unit area acting on the cylindrical surface of the disk, the total force acting on the cylindrical surface is $2\pi r_o \Delta x \tau_o$. The disk's acceleration being zero, the sum of the forces in the flow direction must be zero also; that is:

$$\pi r_o^2 \Delta p + 2\pi r_o \Delta x \tau_o = 0 \qquad (4)$$

or

$$\Delta p / \Delta x = 2\tau_o / r_o \qquad (5)$$

which gives the pressure gradient in terms of the wall friction. If the flow direction is taken as positive, both Δp and τ_o are negative; Δx and r_o are positive.

Radial Pressure

In addition to the friction there is a radial pressure on the cylindrical surface which varies from p at the upstream edge to p+ at the downstream edge.

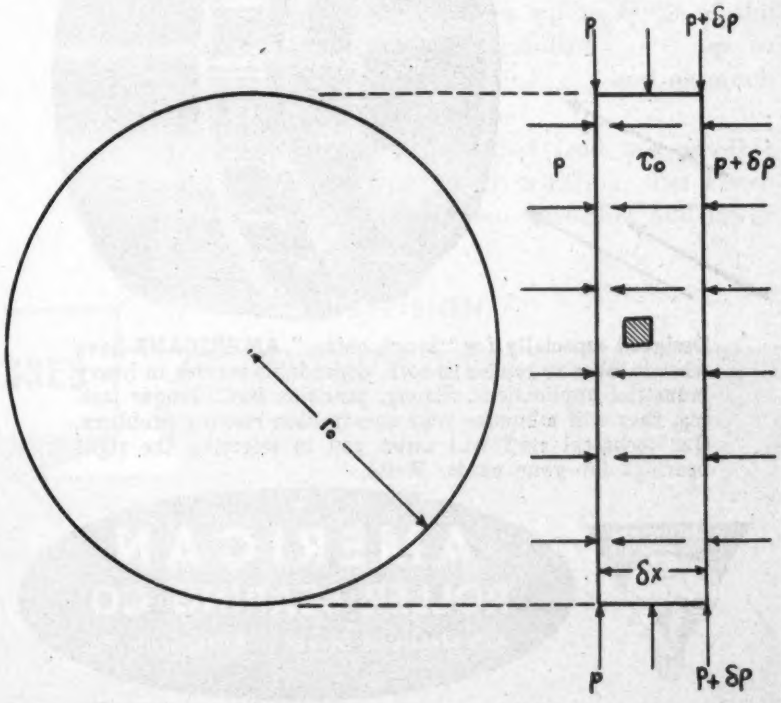


Fig. 5—Force on a disk of fluid flowing through pipe, the disk being bounded by the pipe

*Consulting engineer, Ozone Park, N. Y.

World's First Synthetic Glycerine Plant

(Continued from page 90)

time concerning the behavior of chlorine relative to a double bond.

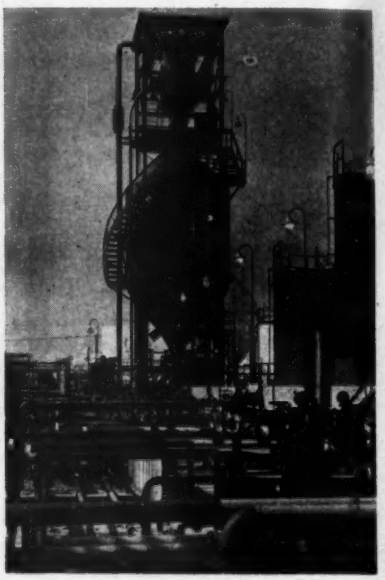
As a result of Shell's research it was proved that, with the proper control of temperature, pressure, and reactant concentration, the substitutive chlorination of propylene to allyl chloride could be achieved in commercially attractive yields.

Although the research and pilot plant work was successfully concluded over 10 years ago, economic conditions and World War II postponed construction of the large-scale plant. Decision to build the plant was made about midyear 1946. This was followed by 2 years of active design and construction work with the plant ready to start production this past month.

Plant Operational Details

Propylene feed is reacted with chlorine at high temperatures in the first step of the synthetic-glycerine process. Flow rates, temperature, and pressure are controlled to obtain optimum reaction conditions for the formation of allyl chloride. The reaction mixture is then purified through a series of distillations.

The pure allyl chloride reacts with caustic soda, chlorine, and water in the synthesis unit to form crude glycerine. The conversion proceeds under controlled conditions of pH, flow rate, temperature, and time. A dilute solution of glycerine and salt composes the effluent stream from the glycerine unit.



Elevated processing equipment, chemical storage facilities, and some of the complex piping at Shell's synthetic glycerine plant are shown here

The next steps consist of concentration, desalting, and purifying the crude glycerine. The raw solution is pumped to multiple-effect evaporators which contain over a quarter of an acre of heating surface. A concentrated, salt-glycerine slurry is withdrawn from the last stage of the evaporators and pumped to a settling tank. From this vessel, the glycerine solution is withdrawn and charged to another evaporator for further concentration.

After the concentrating operations, the glycerine is desalted and purified. Desalting is performed in a system of evaporators in which the glycerine is distilled under reduced pressure, removing the last traces of salt. Following this, the glycerine undergoes a series of purification treatments which result in a product of better than 99 per cent purity.

The purified glycerine is then sent to storage to await shipment. Shipment is made in a fleet of specially built, Fiberglas-insulated, aluminum tank cars. This is done to prevent any possible contamination, not because of any corrosive properties of the glycerine.

Alkyd resins, explosives and cellophane are the major outlets for glycerine today, although by no means

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the only outlets. Over 1,500 applications for glycerine have been recorded.

The manufacture of alkyd resins and ester gums is the largest application for glycerine. In 1941, over 40 million pounds of glycerine were consumed for this purpose. These resins are used in paints, enamels, lacquers, and other surface coatings.

Cellophane manufacture accounts for over 20 million pounds of glycerine annually. In the explosives industry, over 30 million pounds are consumed annually in the form of dynamite and nitroglycerine.

There are a number of other miscellaneous uses for this colorless, odorless, sweet-tasting liquid. These include: candy, salad dressing, processing of tobacco, toothpaste, cough drops, shaving cream, toilet soap, and in the preparation of numerous other medicines, pharmaceuticals, and cosmetics.

In the processing of foods, glycerine is useful because it is miscible with polar and nonpolar materials, retards moisture evaporation, adds to the calorific value of the food, and acts as a preservative. In the processing of tobacco, its humectant properties keep the tobacco sweet-tasting and fresh.

First Discovered in 1779

The story of glycerine begins around 1779 with a young Swedish scientist, Dr. Karl Wilhelm Scheele. Scheele was making plaster out of olive oil and lead oxide when he accidentally spilled some water on the mixture. The next day, after the water had evaporated, he was surprised to find the plaster covered with a sweet-tasting syrupy liquid. By further experimental work, Scheele found that he could produce the same liquid by using almond oil, lard, or butter. In 1783, he delivered a paper before the Royal Academy of Sweden concerning his discovery.

No use was made of this discovery until 1811, when the French chemist, Chevreul, initiated his investigations into the nature of fats and oils. He studied the composition of the sweet liquid and gave it the name, glycerine, derived from the Greek word for "sweet." He established the exact chemical composition of glycerine and uses began to be found for it. In 1832, Chevreul discovered and patented a method of reacting fats with lime to produce glycerine and crude soap—the process was called saponification.

Other processes for the hydrolysis or saponification of fats and oils were developed using various combinations of temperature, pressure, and alkali. Chevreul's method is the primary source of glycerine today as a by-product of the soap industrv.

In 1847, Sobrero published his discovery of nitroglycerine—a difficult explosive to handle. Alfred Nobel in 1863 discovered that a certain type of earth, kieselguhr, would absorb large quantities of nitroglycerine, in which form it was safe to handle. Nobel's discovery was present-day dynamite.

Soap Industry Main Source

Up to the present time, glycerine has been manufactured primarily as (1) a byproduct of the soap industry, and (2) by fat splitting, in which it is a byproduct of the fatty-acid industry. In recent years more than 75 per cent of the nation's total has been as a soap industry byproduct.

Because it is a byproduct, glycerine's availability heretofore has been wholly dependent on the production of soap and fatty acids. This dependence has caused scarcity and high prices during times of crisis such as the recent war. During the war it was necessary for the Government to curtail nonessential uses of glycerine and urge housewives to save waste fats to provide raw materials for glycerine manufacture. The synthetic manufacture of glycerine by the Shell process will alleviate any such future situations.

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QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

Manometer Tank Gage

We have heard of manometer-type gages that are used in the chemical industry. What is the principle by which they operate? Perhaps they could be used for pressure storage tanks.—N. P. S.

One such gage operates as indicated in Fig. 1 on this page. The vapor space in the tank is connected to the gage side of the U-tube and the other side of the U-tube is connected to a column of gas which extends to a point below any commonly encountered liquid level. The gas column is kept full of air or inert gas by means of a hand pump or a supply of compressed gas. The exact elevation or position of the bottom of the gas column is used as a datum plane, and heights above this point are measured by the gage.

Air is admitted to the gas column until the gage reading changes no more. This indicates that the gas tube is entirely full and that the hydrostatic head of the entire column of liquid above the bottom of the gas column is being applied to the gas column. This pressure is directly registered on the manometer liquid. The density of the material in the tank at the existing temperature must be accurately known. With such information, the height of liquid above the datum plane can be computed by the direct ratio of the density of the tank liquid and the density of the gage liquid, as:

$$H_t = H_g \frac{D_g}{D_t}$$

in which:

H_t = height in tank above datum.
H_g = height on gage in same unit as H_t.
D_t = density of tank liquid at the tank temperature and pressure.
D_g = density of gage liquid at the manometer temperature and pressure.

Such a gage is made by King Engineering Co. of Ann Arbor, Mich.

Drying Propane or Butane By Vaporation

In our question of February 19, 1948, "Drying Oils by Distillation," no references to the drying of propane or butane were given. Several articles have been called to our attention by our readers.—F. H. P.

Apparently the drying of propane has been practiced for many years because K. H. Hachmuth published "Dehydrating Commercial Propane" in the Butane-Propane News Department of Western Gas in January 1932. A most complete study of the relationship between water-saturated propane and its vapor was published by Poettmann and Dean (Water Content of Propane, Pet. Refiner, December 1948). In this article they also summarize the data of Reamer, Olds, Sage, and Lacey, Ind. Eng. Chem., 36, 381 (1944) on the system butane-water. Equilibrium constants of the water in propane (or butane) vapor and propane (or butane) liquid from their paper are shown in Table 1.

TABLE 1
Approximate Equilibrium Constants of the Distribution of Water Between Liquid and Vapor

Temp. (°F.)	K = y/x, equilibrium constants	
	Propane	Butane
0	22.0	....
20	18.0	....
40	14.5	84 0
60	11.7	63.5
80	9.5	47.5
100	7.6	35.5
120	6.1	26.5
140	5.0	20.0
160	4.0	15.0
180	3.0	11.3
190	2.4	9.8
200	1.65	8.5
206	1.0	....
220	....	6.4
240	....	4.8
260	....	3.6
280	....	2.7
290	....	2.25
300	....	1.65
306	....	1.0

The equilibrium constants shown in Table 1 are the ratio of the mol concentration of water in the vapor (y), to the mol concentration of water in the liquid (x):

$$K = y/x$$

At 20° F. the K for propane-water is 18. This means that the vapor will contain at equilibrium 18 times as much water as the liquid. Obviously, only small amounts of propane (or butane) need be vaporized at low temperatures to eliminate most of the water into the vapor. Although theoretically the K's given in Table 1 should be based on mol concentrations, they can be used as the ratio of weight per cents as well as mol per cents because at the very low concentrations encountered in propane-water or butane-water systems there is no difference in the results by the two bases.

Isothermal weathering charts for propane and for butane are also shown by Poettmann and Dean. These are too large to be reproduced here but by means of them any common dehydration or weathering problem can be solved with ease.

Finally, the phase relationships between propane and water as a function of temperature and pressure is shown on page 209 of Petroleum Engineer of August 1944. This indicates the ranges of temperature and pressure at which solutions occur, where vapor exists, where hydrates exist, and where ice occurs. The Poettmann and Dean information given on this page applies only to the region where two liquid phases (propane-rich and water-rich) and a vapor phase coexist.

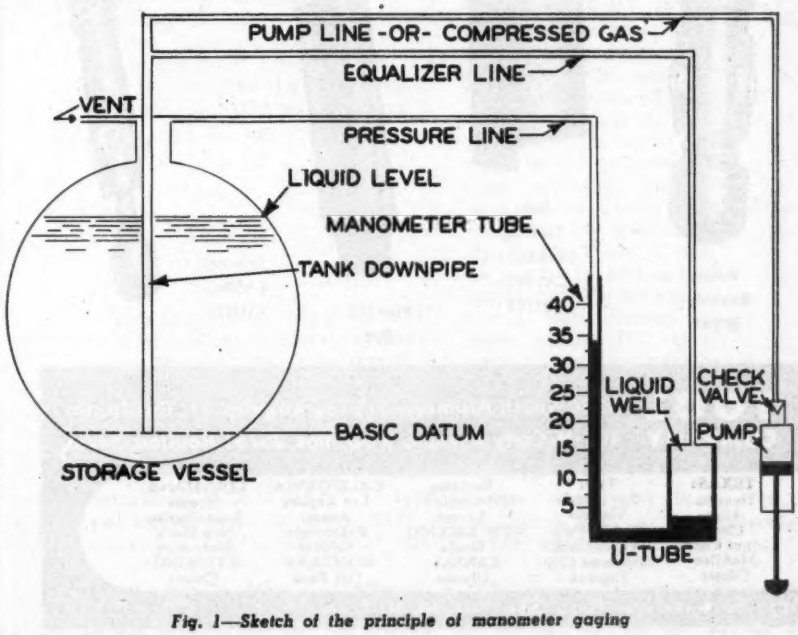

Fig. 1—Sketch of the principle of manometer gaging

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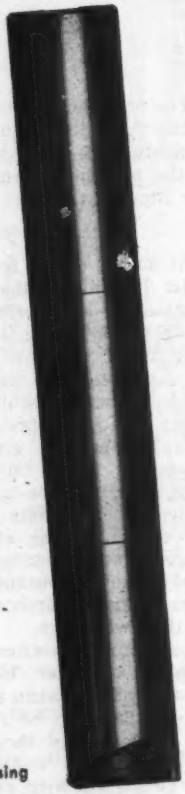
ROTARY JAR
Strikes Blows Both
UP and DOWN



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Decline of Productivity Index on an Internal Gas-Drive Reservoir

THE theoretical productivity index of a radial system under steady state flow can be expressed as:

$$P.I. = \frac{7.07\ kh}{(P_e - P_w)\ \ln R_e/R_w} \int_{P_w}^{P_e} \frac{k_o/k}{\mu_o \beta}\, dp \qquad (1)$$

and it is inherent that the value obtained will depend on both P_e and P_w for a given gas-oil ratio of the system because the quantity under the integral sign does not vary linearly with pressure. In order to use the P.I. value as a comparison, therefore, some standard conditions of measurement must be used. It has been suggested[1] that the comparison be made for $(P_e - P_w)$ equal to zero, that is, for the condition that P_w approaches P_e as a limit. If $(P_e - P_w)$ approaches zero as a limit then the P.I. becomes:

$$P.I. = \frac{7.07\ kh}{\ln R_e/R_w} \left(\frac{k_o/k}{\mu_o \beta}\right)_{P_e} \qquad (2)$$

where P_e is the static reservoir pressure. To compare P.I. values at two different times when the static reservoir pressures are P_{e_1} and P_{e_2} one has the following (if it is assumed that at both time k, h, R_e, and R_w are constant):

$$\frac{(P.I.)_1}{(P.I.)_2} = \frac{\left(\frac{k_o/k}{\mu_o \beta}\right)_{P_{e_1}}}{\left(\frac{k_o/k}{\mu_o \beta}\right)_{P_{e_2}}} \qquad (3)$$

This relationship has been used[2,3] to evaluate the productivity index on an internal gas drive reservoir. To do so it is first necessary to establish the reservoir oil saturation at some future pressure on the reservoir. From the pressure, μ_o and β are defined, and from the saturation, k_o/k is defined. A typical decline in productivity index is shown in Fig. 1, where the subscript i represents initial pressure conditions.

Such a productivity index decline applies to an ideal case, of course, and strictly speaking, to a reservoir rather than to a well. However, the relative drop in P.I. as cumulative increases can be used for estimations even on well systems. The usefulness of this theoretical approach to practical calculations lies more in the relative decline indicated than it does in the absolute value of the productivity index. Thus, it may be useful to plot actual productivity index values for a well divided by some initial P.I. base, versus the cumulative production from the well in order to correlate with the theoretical productivity index decline calculated.

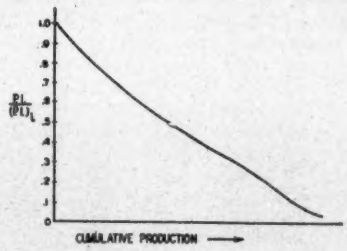

Fig. 1—Typical theoretical decline of productivity index for an internal gas-drive reservoir

The theoretical drop indicated for the reservoir system would apply to a well system provided withdrawals and pressure decline for the well system were equivalent to the reservoir average. Since such is not ordinarily the case, one does not have, for a well system, the pressure and saturation values in the same pairs that give the graph of Fig. 1. However, a group of theoretical declines can be calculated for various pressure and saturation pairs that might exist in the well system. The observed P.I. drop versus cumulative can then be fitted to one such curve to indicate the performance of the well system compared to the reservoir as an average.

Fig. 2 indicates the type variation of the quantity $P.I./(P.I.)_i$ at various pressures for constant saturations. Thus, if pressure on a particular well system and saturation were known such a graph would give a value of $P.I./(P.I.)_i$, or if the latter and pressure were known, a value of saturation might be estimated. Fig. 2 is, of course, prepared for a particular system. In this case the original oil saturation was 0.8 and the original pressure chosen was 3,500 psia.

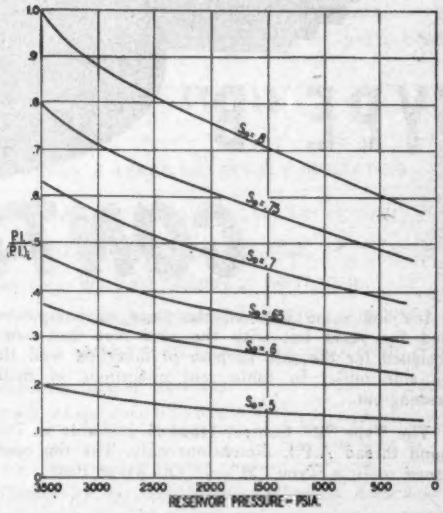

Fig. 2—Theoretical variation of productivity index decline with pressure and saturation of a particular well system

References

1. Evinger and Muskat, Calculation of Theoretical Productivity Factor, A.I.M.E. Trans. Vol. 146 (1942).

2. Babson, Prediction of Reservoir Behavior From Laboratory Data, A.I.M.E. Trans. Vol. 155 (1944).

3. Muskat and Taylor, Petroleum Technology, March 1946.

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, University of Oklahoma

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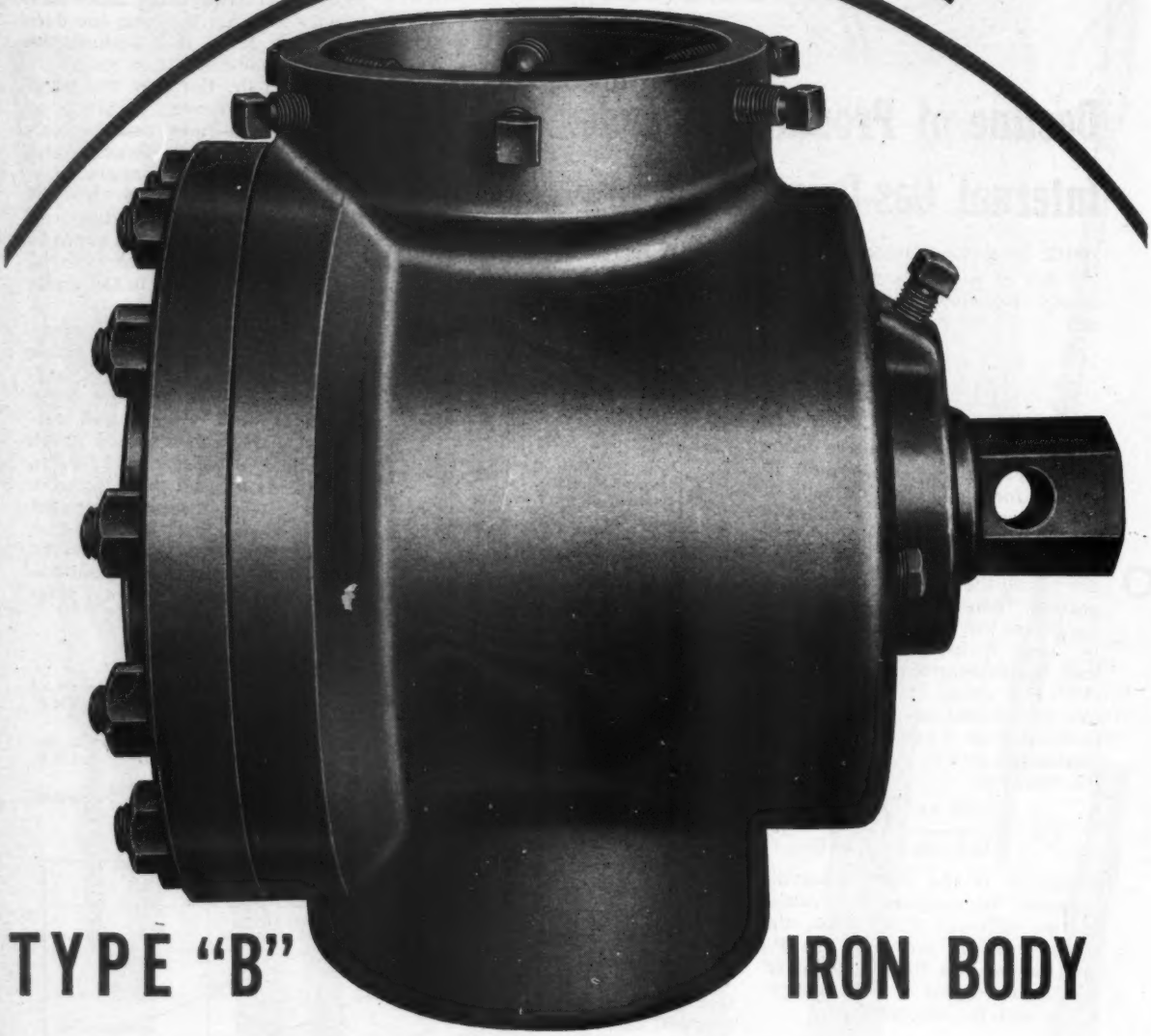

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The Type "B" Control Head is available in 7" O.D. eight round thread A.P.I. dimensions only. The top opening is designed to fit a Type "M"—7" Oil Saver Base.

This Control Head is plastic packed, with packing adjustment being made by means of the set screw at the plug stem.

To lubricate the Type "B" Control Head it is only necessary to remove the ½" hex head steel pipe plug located near the pipe stem. This head cannot be lubricated under pressure. The plug is notched so that it can be closed on the wire line.

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The Refiner's Notebook

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

Safety in Use and Handling of Ammonia

AMMONIA is one of the most powerful of all alkalies. Exposure of a human being to high concentrations may cause severe burns or blindness and inhalation of the fumes may strangle and eventually kill the victim.

Ammonia is used extensively in petroleum refineries to neutralize the hydrochloric acid that is liberated from the salt brine found in the crude oil. When used in amounts of 2 to 15 lb. per 1,000 bbl. of crude oil, or to maintain a pH value of about 7.5 in the condensate water, the corrosion may be reduced in some instances to less than 10 per cent of the rate when no neutralizer is employed.

The specific gravities, Baume numbers and concentrations of ammonia solutions were presented in Refiner's Notebook No. 85, March 16, 1946, page 101. A laboratory method of determining the amount of hydrochloric acid that will be evolved when a crude oil is distilled was given in Refiner's Notebook No. 32, March 3, 1945, page 41. Methods of determining the salt content of crude oils are discussed in Notebook No. 29 of February 10, 1945, page 38.

The Division of Labor Standards of the U. S. Department of Labor has established the following set of precautionary measures:

Types of Installations

Every refrigerating machine exceeding 3-ton capacity which uses anhydrous ammonia should be placed in a room apart from any other room where more than five persons are employed. Machines not exceeding 3-ton capacity, when installed in a room where more than five persons are employed, should be substantially enclosed, with an opening to the outside.

Protective Equipment

Wherever anhydrous or aqua ammonia is handled, used in process or as a refrigerant, a Bureau of Mines approved, full-face canister-type mask providing full protection against the inhalation of ammonia fumes should be used. If quantities of more than 1,000 lb. of ammonia are used or handled in processes or as a refrigerant (anhydrous only), at least two such masks should be available.

Since the canister-type masks do not produce oxygen, they are suitable only for relatively low concentrations of gas and for brief periods. At locations where high concentrations of gas may be encountered, respiratory protective equipment such as hose masks or self-contained oxygen breathing apparatus should be available, in addition to the canister-type masks.

Hose masks, whereby fresh air is taken from the outside and pumped through the hose attached to the face piece, should be provided for men who must enter and work in high concentrations of ammonia, or in oxygen-deficient atmospheres such as tank cars, storage tanks, pits, and sewers handling ammoniacal wastes. The wearer of a hose mask is ordinarily restricted to a working distance of the length of the hose which may be extended to 150 ft.

A self-contained oxygen breathing apparatus provides the wearer with a supply of pure oxygen independent of the atmosphere in which he may be working. The equipment provides greater freedom of movement but the length of time it may be used is limited by the size of the oxygen container.

All respiratory equipment should bear the seal of approval of the Bureau of Mines. Wherever this equipment is stored it should be inspected at regular intervals to make sure it is in proper working order for any emergency.

After using any equipment, it should be carefully serviced by cleaning, sterilizing the inside of the face pieces, replacing the canister if necessary, or replacing the oxygen container with one which is fully charged. The equipment should be stored where it is readily available for immediate use, preferable near an exit. Approved-type safety goggles and protective clothing should be furnished all workers exposed to ammonia solutions.

Unloading Tank Cars

Operations should be performed

AQUA AMMONIA

WARNING! LIQUID CAUSES BURNS • VAPOR EXTREMELY IRRITATING

Avoid breathing vapor. Avoid contact with eyes—skin—or clothing

• CARBOY HANDLING AND STORAGE •

BEFORE MOVING CARBOY be sure closure is securely fastened.
LOOSEN CLOSURE carefully.
KEEP OUT OF SUN and away from heat.
NEVER USE PRESSURE TO EMPTY.
COMPLETELY DRAIN CARBOY BEFORE RETURNING.
IN CASE OF SPILLAGE flush with plenty of water.

FIRST AID in case of contact:

Immediately flush eyes or skin with plenty of water for at least 15 minutes.

M. C. A. OF U. S. FORM 15 PRINTED IN U. S. A.

Fig. 1—This warning label was issued by the Manufacturing Chemists Association and has been adopted as standard for posting on all carboys containing aqua ammonia. A similar label was developed for use on steel drums holding aqua ammonia

No. 214 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

only by properly instructed workers who are responsible for compliance with regulations laid down by the Interstate Commerce Commission for "Transportation by Rail of Explosives and Other Dangerous Articles by Freight."

Repair and Cleaning of Tank Cars

Protective clothing and approved-type hose masks and life lines should be furnished workers entering cars. The lines should be serviced by a helper on the outside who is fully instructed as to his duties in case of an emergency.

Tools

Only nonsparking tools should be used.

Training

All employes subject to exposure to ammonia fumes should be thoroughly trained in the proper use of respiratory protective devices provided for emergency use. It is important that all employes be acquainted with the location of gas masks or other protective equipment.

Emergency Supplies and Fittings

One or more safety showers of the treadle type should be immediately available in case of splashing of body. One or more of the foot-operated types of bubbler fountains should also be immediately available to flush the eyes. At least one stretcher and one blanket should be placed where they could be had at a moment's notice.

Light Fixtures

Use only vaporproof type of fixtures with protecting cages. Extension cords—single piece waterproof—should be plugged in only at vapor-free locations. Tanks, line, and equipment should be washed free of ammonia before gas or electric welding takes place.

Handling and Storage

Keep ammonia away from other chemicals such as chlorine, bromine, iodine, and mineral acids. It should preferably be stored in a sprinklered building and be kept cool. Always handle carefully. If good ventilation is provided for the stored ammonia the gas will dissipate.

All instructions printed on the shippers' tags should be scrupulously observed. In case of fire remove the cylinders or notify firemen of stored cylinders.

Anhydrous Ammonia

The hazards arising from the presence of anhydrous ammonia are: pressure, thermal explosion, physiological, and irritation of mucous membranes. When the anhydrous ammonia is stored in steel cylinders never drop or permit them to strike against each other violently. Never use the cylinders as rollers or supports; open cylinder valves slowly and use only tools approved by the gas manufacturer.

Never hammer the valve wheel. Do not store near elevators or gangways and do not store empty cylinders with full ones.

Aqua Ammonia

A different set of hazards arises from aqua ammonia; here we are confronted with danger of splashing, burns, and as above, irritation of mucous membranes. When the aqua ammonia is being handled in drums the handlers should be employes who are trained workmen wearing approved-type safety goggles and suitable protective clothing. The drums should be stored off the ground and with the plugs closed. In hot weather ease the plugs but never loosen them by striking the drum. They should be emptied by gravity only.

When the aqua ammonia is stored in carboys thoroughly instruct the men handling the carboys as to safe practices. Provide approved-type safety goggles. Before moving boxed carboys make certain the bottles do not leak and that the stopper is wired in place. Use special carboy trucks and do not use hooks on carboys. Do not "walk" boxed carboys on their edges. Empty them by means of inclinator or siphon. Tilt the neck of full or empty bottles away from the worker. Drain carboys thoroughly before return.

The same hazards exist in the handling of household ammonia as with aqua ammonia. When bottling household ammonia, the worker should be completely protected with goggles and clothing as described above.

TABLE 1—TABLE OF CHARACTERISTICS OF AQUA AND ANHYDROUS AMMONIA

Name	Usual shipping containers	Fire hazard	Storage	Fire fighting phases	Remarks
Anhydrous ammonia NH_3	Steel cylinders or steel tank cars (high pressure) conforming to ICC specifications. ICC requires a green warning label.	Gas density 0.60 (air = 1). Not flammable in air except in comparatively high concentration, seldom encountered under practical conditions; low limit of the flammable or explosive range being about 15 to 16 per cent, upper limit about 25 to 26 per cent by volume (horizontal propagation). Presence of oil increases fire hazard.	Safeguard against mechanical injury and excessive heating of cylinders or tanks. Fire-resistant storage recommended. With combustibles, sprinklered storage recommended. Isolate from other chemicals, particularly chlorine, bromine, iodine, and mineral acids.	Soluble in water. Hose streams comparatively effective in removing the gas from the atmosphere.	Extensively employed as a refrigerant and in industry. If a pipe or joint breaks, the gas escapes into the air.
Aqua ammonia NH_4OH	Tank cars (low pressure). Steel drums, glass-carboys, 1 or 5 pint bottles. Nonregulatory; no ICC label.	Aqua ammonia does not burn.			Accidental spillage in handling small containers may splash eyes and skin.

	Flash point (°F.)	Ignition temp. (°F.)	Explosive limits, per cent by volume		Vapor density (air = 1)	Boiling point (°F.)
			Lower	Upper		
Anhydrous ammonia NH_3	Gas	1,204	16.0	25.0	0.597	—28
		1,204	16.1	26.6	....	....
		1,436	16.0	25.0	....	....
		....	16.0	27.0	....	....
Aqua ammonia	Nonflammable, being a water solution				Properties vary, depending on strength	

JOURNAL-*Series* ON

Petroleum Engineering

Time Savers

4—Chart for Calculating Instantaneous Gas-Oil Ratios

The following equation is quite commonly used to express the dependence of producing gas oil ratio upon fluid and sand characteristics.

$$R = \frac{k_g}{k_o}\frac{u_o}{u_g}\frac{\beta}{v} + r \qquad (1)$$

where R is the surface producing gas oil ratio at anytime when the reservoir pressure is P and the oil saturation is S_o, expressed in S.C.F. per barrel of stock tank oil.

- r = number of S.C.F. of gas in solution per barrel of stock tank oil at the pressure P.
- β = liquid phase formation volume factor at pressure P
- v = barrels of space needed at pressure P to handle one S.C.F. of gas
- u_o = viscosity of the reservoir liquid at pressure P, in centipoises
- u_g = viscosity of the free gas in the reservoir at pressure P, in centiopises, and
- $\frac{k_g}{k_o}$ = relative permeability ratio of gas to oil at the reservoir oil saturation, S_o.

The accompanying chart has been based on Equation 1 expressing the term (R-r) as a unit. The chart can be used to estimate R if the remaining terms are known or to calculate k_g/k_o values from producing gas oil ratio data. Since all quantities appear as multiples, any one can be used in a decimal ratio provided correction of the final result is made in the same decimal ratio.

To illustrate use of the chart, a producing gas-oil ratio was measursd as 1,920 cu. ft. per bbl. at an average reservoir pressure of 2,153 psia. and β was 1.345, r was 500 cu. ft. per bbl., v was 0.0011, and u_o/u_g ratio was 55.0. (R-r) will be 1,420 and the chart then gives a value of 0.0215 for k_g/k_o. By the formula

$$\frac{k_g}{k_o} = \frac{(1{,}920 - 500) \times .0011}{1.345 \times 55} = .0211$$

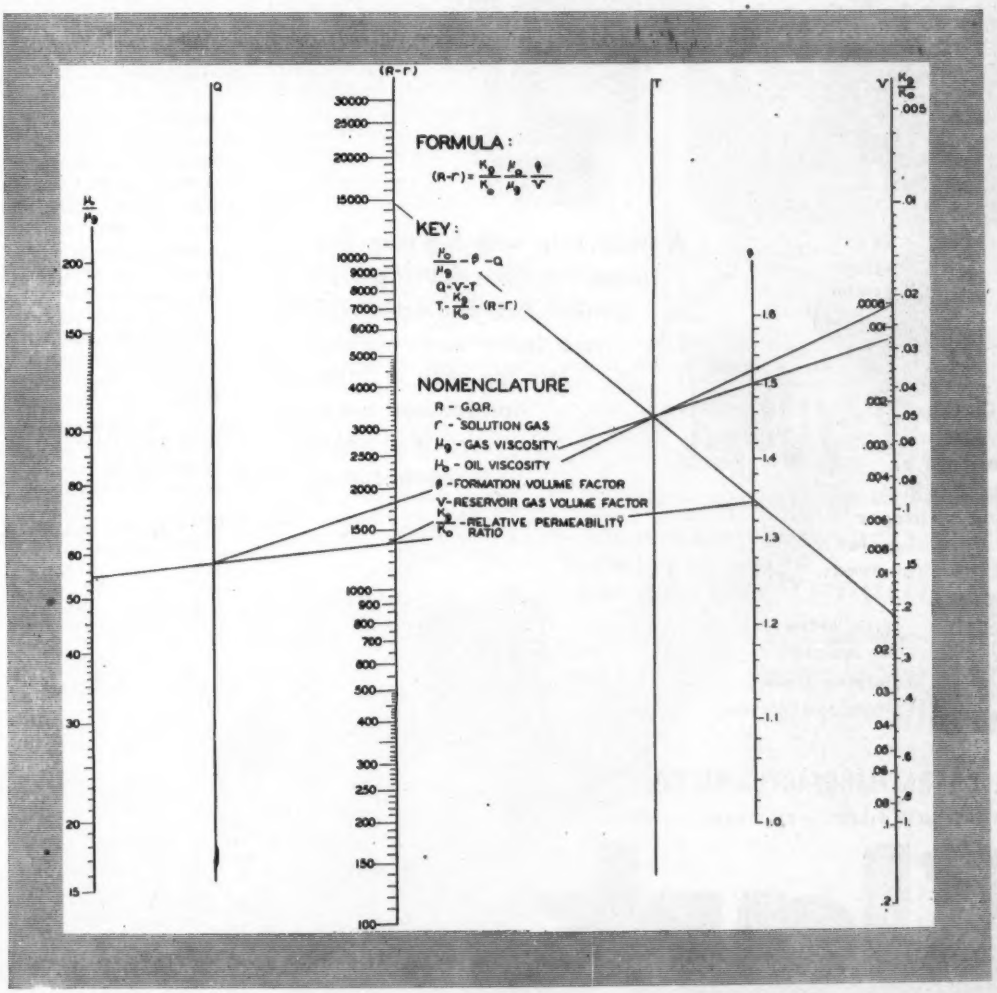

Chart by R. G. Loper and J. D. Clark, University of Oklahoma.

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, University of Oklahoma

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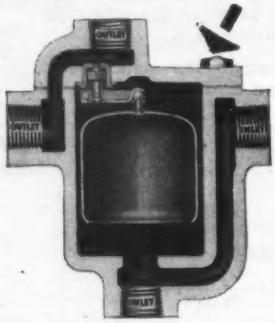

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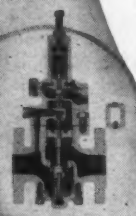

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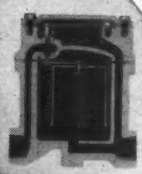

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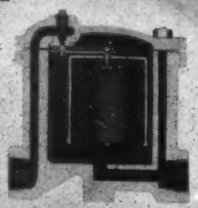

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PIPE LINES

Panhandle Eastern Lets 26-In. Loops Contract

PANHANDLE EASTERN PIPE LINE Co. has awarded a contract to Midwestern Constructors, Inc., for construction of three 26-in. loops totaling 43 miles.

These loops consist of 15 miles near Centralia, Mo., 10.8 miles near Pleasant Hill, Mo., and 17.1 miles near Glenarm, Ill. Right-of-way work was scheduled to start September 15. Last weekend M. T. Wilhite, superintendent, had not located a field office for the project. The contract also includes the 24-in. Sangamon River-Glenarm crossing.

On October 15, Panhandle Eastern will take bids for another group of loops totaling 155 miles of 26-in. to be laid near Houstonia, Mo.; Louisburg, Olpe, Haven, and Liberal, Kans.; and Hansford, Tex. These, together with the loops recently let to Midwestern, total 198 miles.

Midwestern has completed 25 per cent of the work for installing additional compressor station facilities at Liberal, Hugoton, and Santanta, Kans., for Panhandle Eastern. This compressor work is being supervised for the contractor by J. A. Bard from headquarters at Liberal.

Wilhite is coming to the Panhandle Eastern loop contract of Midwestern from a contract for construction of 26-in. loops for Natural Gas Pipeline Co. of America. These are 13.6 miles near Knoxville, Iowa, completed August 25, and 13.8 miles near Geneseo, Ill., completed last week.

For General Electric Co.'s lamp department, Midwestern began operations September 7 for the installation of 82 storage bottles at Circleville, Bucyrus, and Bellevue, Ohio, supervised by Frank S. Everett with headquarters at Belleville, Ohio. The laying of 40 miles of 20-in. near Sugar Grove, Ohio, for Ohio Fuel Gas Co., 65 per cent completed, has been delayed by excessive rainy weather. Clyde Peters supervises the job from Wellston, Ohio, for Midwestern.

This contractor has finished 35 per cent of the Socony-Vacuum Oil Co., Inc., 155 miles of 8-in. products line supervised by Lacy Walker from a field office at 843 Hamilton St., Allentown, Pa. Another Midwestern contract in the East was 27 miles of 6-8-12-in. gas lines for Texas Eastern Transmission Corp., sublet from Brown & Root, Inc., completed in Philadelphia September 10, under supervision of Richard Leonard.

Santos Jundiai Railroad To Lay Brazil Pipe Line

Arrangements have been made by the National Petroleum Council of Brazil to have a pipe-line system built and operated by the Santos Jundiai Railroad. Coustruction is to start as soon as pipe can be obtained from the United States.

The system will consist of a 30-mile, 18-in. crude-oil line from the port of Santos to Sao Paulo, which will be

Backhoe operating near highway in the Jasper, Tex., area in connection with Bechtel Corp. spread operations in the laying of 30-31-in. pipe under the Price-Bechtel contract for laying a 210-mile loop for Tennessee Gas Transmission Co.'s second line

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- (2nd) **Type RN** Pig with 2 sets of rotation nozzles; by-pass gas purges brush bristles; brushes may be shimmed to compensate for wear.
- (3rd) **Type RCN** Pig with single row of rotation nozzles; new compact design for traversing long-radius factory ells. Light weight construction.
- (4th) Small size, **Type RCN** Pig, improved model will negotiate sharp bends; equipped with nozzle plugs for control of by-pass gas.

*Patents pending

THE PIG WITH THE POKE CLEANS PIPE LINES

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paralleled by a 10-in. products line to extend beyond Sao Paulo via Jundiai to Campinas, with a total length of approximately 42 miles.

The crude-oil line will deliver to a refinery planned for construction at Sao Paulo which is to be financed by Brazilian capital. It is reported that the decision to have the pipe-line system built and operated by the Santos Jundiai Railroad was influenced by an estimate that the traffic carried by the pipe line would reduce the railroad's business 25 per cent.

Price Lays 30 Miles of 30-31-In. for T.G.T. Loop

The two spreads of H. C. Price Co. had laid 30 miles of 30-31-in. pipe according to September 12 reports. This work was done on the 210-mile contract with Price-Bechtel, a joint venture, for the looping program of Tennessee Gas Transmission Co.

These two spreads are Spread A, based at Wharton, Tex., under J. E. Ellis, and Spread C at Natchitoches, La., under Abe Reutzel. Spread B of Bechtel Corp. is operating in the Jasper, Tex., area under the direction of R. A. Conyes.

For the 54-mile, 24-in. loop being laid in Illinois for Natural Gas Pipeline Co. of America, H. C. Price Co. had laid 45 miles up to the beginning of this week. R. R. Shivel supervises the job with headquarters at Geneseo, Ill.

On September 10 it was reported that the H. C. Price spread had completed 11 miles in laying 35 miles of 24-in. for Southern Natural Gas Co. W. B. Williams, spread superintendent, operates from Bessemer, Ala.

Argentina Will Build 400-Mile Crude Line

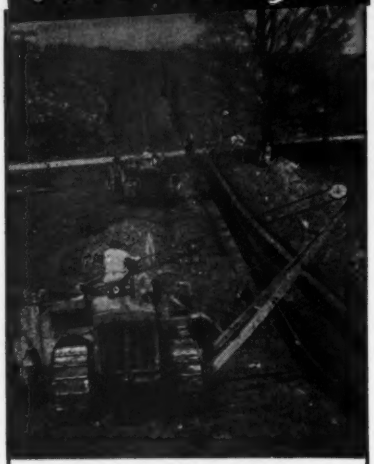
Yacimientos Petroliferos Fiscales of Argentina is planning the construction of a 400-mile crude-oil pipe line from Plaza Huincal field to Bahia Blanca, on the seacoast.

Bids will be called for in 1949, according to recent reports. Matters connected with the project are being handled under the direction of Alberto Landoni, director of production and pipe lines for YPF, 777 Avenida Roque Saenz Pena, Buenos Aires, Argentina.

Iroquois Gets Approval Of FPC on New Projects

Iroquois Gas Corp. has been granted temporary authorization by the Federal Power Commission to construct natural-gas transmission and storage facilities in New York state at an estimated cost of $1,357,000.

DEPENDABLY PROTECTED with Reilly PIPE ENAMEL



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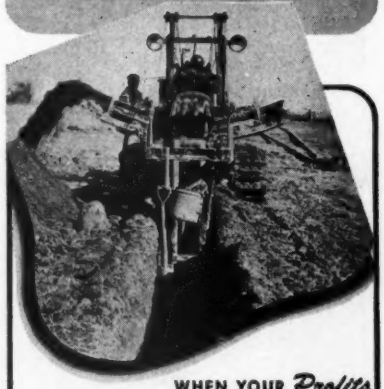

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The company had asked authority to construct 13 miles of 22-in. line looping a section of the company's existing lines, development of a new storage field in Erie County, and enlargement of two existing storage fields in Erie County.

Gas-Transmission Research Fellowship is Established

A graduate fellowship for study and research in the field of natural-gas transmission has been established at Texas Agricultural and Mechanical College, College Station, Tex., by Tennessee Gas Transmission Co.

The fellowship is open to graduates of any accredited college or university. Selection will be made by Harold Vance, head of the college's department of petroleum engineering, in consultation with Tennessee Gas Transmission Co. officials.

Preliminary Work Begins On Ozark Pipe Line

Preliminary construction work has begun on the Ozark Pipe Line System, a 435-mile, 22-in. oil line from Cushing, Okla., to Wood River, Ill. This joint venture of Shell Pipe Line Corp. and The Texas Pipe Line Co. is scheduled for completion in 18 months. A 54-mile, 22-in. extension (owned 100 per cent by Texas) from Wood River to Patoka, Ill., is also planned.

(For further details on the $30,000,000 project to be operated in the name of Shell Pipe Line Corp. see The Oil and Gas Journal, September 2, page 96, and July 29, page 290).

Crude Movements of Top 10 Companies Tabulated

Humble Pipe Line Co. handled 74,158,692 bbl. of crude oil during the second quarter of 1948 to remain at the top of list of companies involved in pipe-line transportation of crude.

Others in the top 10 and the amount each moved by pipe line include:

Interstate Pipe Line Co., 42,082,910; Magnolia Pipe Line Co., 41,597,940; Gulf Refining Co., 39,445,054; Buckeye Pipe Line Co., 37,824,662; Texas Pipe Line Co. 37,636,933; Stanolind Pipe Line Co., 35,832,215; Ohio Oil Co., Pipe Line Department, 31,974,962; Sinclair Refining Co., 31,321,720; and Atlantic Pipe Line Co., 21,681,569.

Humble also topped the list in gross income from crude movements by pipe line with a second-quarter income of $9,403,842. Stanolind was second in this category with $8,768,666, and Gulf Refining was third with $6,955,300.

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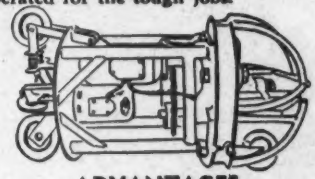

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NATURAL GAS

Immediate Hearing Set For Major Gas Projects

Oral arguments are scheduled to be held September 16 on applications of Atlantic Seaboard Corp., Virginia Gas Transmission Corp., and Tennessee Gas Transmission Co. for authority to build additional natural-gas transmission facilities.

In setting the date, the Federal Power Commission eliminated the intermediate-decision procedure. The commission postponed hearing on an application of Commonwealth Natural Gas Corp.

Atlantic Seaboard and Virginia Gas Transmission's proposal is for construction of 268 miles of 26-in. line from Clendenin, W. Va., to Rockville, Md. Cost of the project has been estimated at $20,649,000.

Tennessee Gas requested authority to construct 900 miles of loops along its existing main pipe line, about 395 miles of 26-in. main line from northeastern Kentucky to Buffalo, N. Y., and compressor units aggregating 91,200 hp. Cost of these projects was estimated at $122,904,000.

FPC to Hold Hearings On Allocation Method

Complaints filed by customer companies of Northern Natural Gas Co. concerning the proposed method for allocation of 35,000,000 cu. ft. daily of additional capacity expected to be available on Northern's system by next winter, will be considered at a Federal Power Commission hearing set to open September 28 in Omaha, Neb.

After Northern Natural earlier this year transmitted to each of its customers a proposed plan for allocating the additional natural gas many of the customer companies filed complaints that the allocation was unfair and discriminatory. Later Northern Natural filed a revised plan of allocation, and again customer companies renewed complaints.

The FPC hearing has been set to determine whether the proposed methods of allocating the additional capacity and new town border contracts are unjust, unreasonable, unduly discriminatory or preferential and whether any change should be made in the present tariff regarding the apportionment of additional capacity.

Among those companies filing complaints were: Council Bluffs Gas Co., Central Electric & Gas Co., Minnesota Valley Natural Gas Co., and Hastings Gas Co.

Carthage Plant Begins Partial Production

The dehydration unit of Carthage Corp, serving the Carthage gas distillate pool of Panola County, Texas, has begun partial production. The unit, which is to have an ultimate capacity of some 250,000,000 cu. ft. of gas daily, is now capable of processing approximately 45,000,000 cu. ft. daily.

Pouring of concrete foundations for the remainder of the plant is virtually completed. Completion date for the entire project is dependent upon delivery of materials now on order. Hudson Engineering Crop. has the contract for the plant construction.

The plant, which is located 5 miles east of Marshall, Tex., and is the fifth in Carthage field, occupies a 35-acre tract. The company maintains ofices in Shreveport and Houston.

FPC Orders Study of Gas Sales of Three Companies

Two investigations have been ordered by the Federal Power Commission into the rates and services of natural gas companies.

A rate investigation was ordered in connection with Panhandle Eastern Pipe Line Co.'s sales for resale of natural gas in interstate commerce. A similar investigation was ordered in connection with sales by Canadian River Gas Co. and Colorado Interstate Gas Co.

Hearing to Be Held on Gas-Rate Form Changes

A hearing will be held September 20 on the proposed revisions in rules governing the form, composition, filing, and posting of rate schedules and tariffs for the transportation and sale of natural gas subject to the jurisdiction of the Federal Power Commission.

Copies of the proposed revisions have been sent to companies and individuals concerned, and 31 statements have been received by the FPC concerning various provisions of the proposals.

Several of the suggestions of the gas companies involved for changes in the rules have been incorporated in the revisions issued by the commission, the FPC said.

Natural Gasoline

Continental to Operate Todd Field Gasoline Plant

Continental Oil Co. has been selected as the operator of a natural-gasoline plant to be built by 23 participating operators in Todd (deep) field of West Texas.

The plant will have a capacity of 10,000,000 cu. ft. daily, sufficient to handle all the gas produced in Tood Ranch field, including Ellenburger and Crinoidal pools.

Construction is scheduled to begin immediately on the gas-recovery plant, which will have a daily capacity of 60,000 gal. Refinery Maintenance Co., Compton, Calif., has been named contractor on the project. Completion is expected within 12 months.

L.P.G. Domestic Sales Increase 33 1-3 Per Cent

Domestic sales of liquefied petroleum gases in 1947 increased approximately 33⅓ per cent over the previous year, the same increase that was recorded for the year 1946 over 1945, according to a recent report by the Bureau of Mines.

L.P.G. delivered for domestic consumption totaled 1,150,538,000 gal. in 1947, an increase of more than 50 per cent from the 1946 total of 758,446,000 gal.

Quantities of L.P.G. reported for domestic fuel, gas manufacturing, and chemical raw material showed important gains in 1947 over 1946, while only moderate increases were indicated for industrial use and internal-combustion fuel. A smaller quantity of L.P.G. was sold for synthetic-rubber components in 1947 than in 1946.

Construction Begun on New Gasoline Plant

Construction has been started on a $350,000 gasoline plant in Aylesworth field, near Madill, Okla., for Universal Gasoline Co., an associate of Universal Petroleum Co.

The plant, which will utilize flare gas in the field, will have a capacity of 600,000 cu. ft. per day. Construction is scheduled for completion in January.

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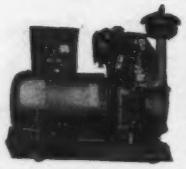

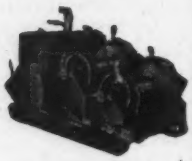

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REFINING

Berry Buys Danciger Refinery at Longview

THE Danciger Oil & Refining Co. refinery and storage tanks at Longview, Tex., and the company's gathering line in the East Texas field have been purchased by W. C. Berry of Tulsa for approximately $1,000,000. Associated with Berry in the purchase are Robert Baker and John Gibson, both of Tulsa. Production of 1,000 bbl. of crude oil daily was also bought by the Tulsa operator from Danciger.

The Danciger plant, which has a crude-oil daily capacity of 7,500 bbl. and a cracking capacity of 4,000 bbl. daily, has been closed down since September 1945. The Danciger organization, which has its headquarters in Fort Worth, now becomes solely a crude-oil producing company.

Since its construction in 1933 the Longview refinery has been thoroughly modernized with Universal Oil Co. cracking equipment. Tank storage at the refinery totals 500,000 bbl.

Fifty miles of 4 and 6-in. pipe is a part of the Longview gathering line system which connects with the Cordova pipe, also a 50-mile line. The two lines extend across the length of the East Texas field. Lease of the Cordova line, formerly held by Danciger, has been taken over by Berry.

The two lines, operating as a single unit, have been moving 4,700 bbl. of crude oil daily, being delivered to the Independent Refining Co. at Arp, Tex., and to buyers through a pipe line to Houston.

Bureau of Standards Adds New Laboratory

The National Bureau of Standards Washington, has added a new laboratory equipped with completely automatic controls whereby studies for automotive-engine performance may be carried out under simulated actual operating conditions. The new laboratory, under direction of A. R. Pierce, is designed for studying effects of cylinder wear, effect of various types of fuels and lubricating oils on pistons, piston rings, bearings, and carburetors.

The automatic test equipment utilizes a battery of five automotive engines from three popular makes of automobiles. Each engine is complete except for fans, radiators, and mufflers, and is coupled to a "dynamometer" — an electric generator which provides a uniform load.

The problem under investigation at the present time by the laboratory is the determination of the amount of sulfur that can be tolerated in gasolines without appreciably increasing wear.

Gilcrease Refinery Begins Operations

NEW ORLEANS.—Gilcrease Oil Co. has started production at the $1,000,000 5,000-bbl. refinery at Meraux, 4 miles southeast of here.

The plant is located at the old site of the Meraux Petroleum Storage Co. Gilcrease plans further plant enlargement and the construction of storage space for approximately 1,000,000 bbl. of oil. Allen M. Peairs is manager of the refinery for Gilcrease Oil Co. which has its home offices in San Antonio.

Paraffin, Steam Refined Stock Show July Gain

Production of paraffin oils and steam refined stock showed increases for July over June while bright stock, viscous neutrals, and blended oils showed decreases, according to the Western Petroleum Association in its report on operations of 13 midwestern refiners.

Production of paraffin oils and steam refined stock increased from 2,443 bbl. daily to 2,565 bbl. and from 617 to 1,190 bbl. daily respectively.

Bright stock production declined from 8,899 bbl. daily in June to 7,792 bbl. in July; viscous neutrals from 16,720 bbl. to 10,324 bbl.; and blended oils from 15,689 bbl. to 13,890 bbl.

Contract for Texas City Expansion Work Awarded

Contract for an extensive building program to expand the engineering and chemical research facilities of Pan American Refining Corp. in Texas City, Tex., has been awarded to H. K. Ferguson Co., Houston.

Work on the program is scheduled to begin immediately, according to D. J. Smith, Pan American president.

The project includes construction of a new administrative building and a completely rebuilt and enlarged laboratory. For the laboratory, the present administration building will be rebuilt and a three-story process laboratory added.

Pan American Refining Corp. is a subsidiary of Pan American Petroleum & Transport Co. Its Texas City refinery includes the first commercial Hydroformer ever built and the largest thermal cracking unit in the world.

Work Progressing at British American Plant

MONTREAL. — Important extensions to the British American Oil Co. refinery at Montreal East are now in progress. The new processing facilities will occupy 56 acres, while existing equipment will be modernized. High octane motor gasoline, kerosine, fuel oils, and asphalt will be among the products. The new plant will be in operation late in 1949.

Shell Chemical Opens Offices in New York

Administrative offices of Shell Chemical Co., formerly located in San Francisco, have been opened in New York City. From this office the company will direct the operation of its plants in Houston, Tex., and in Martinez, Dominguez, and Pittsburg, Calif.

Shell Chemical manufactures and markets petroleum-derived chemicals and chemical intermediates for industrial and agricultural uses.

Goodyear Produces Eight Millionth Synthetic Bale

HOUSTON. — The eight millionth bale of synthetic rubber has been produced at the Houston plant of the Goodyear Synthetic Rubber Corp., according to an announcement by W. E. Forster, plant manager.

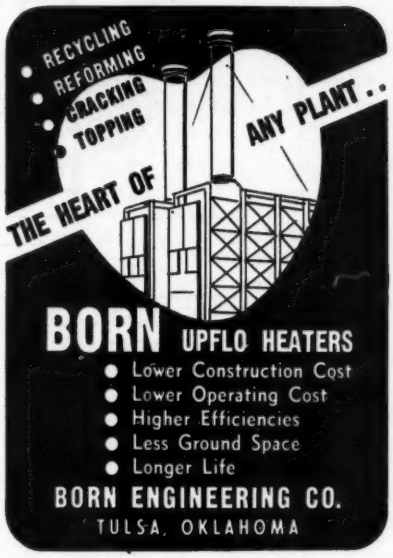
Production in the government-built plant started in October 1943. Currently, the plant is operating at 140 per cent of its rated capacity of 60,000 long tons of rubber annually. It employs 450 persons.

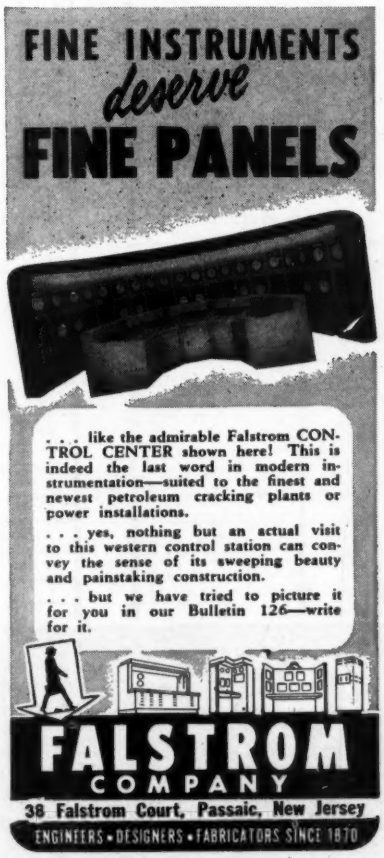
At 75 lb. per bale, the cumulative production of the plant now totals 600,000,000 lb.

New Instrument Measures Piston Lacquer Thickness

Development of a new instrument for the rapid, accurate measurement of lacquer desposits on engine pistons has been announced by The Texas Co. The instrument was developed in the Beacon, N. Y., research laboratories of the company.

Known as the piston lacquer thickness gage, the instrument contains two high-voltage terminals, one attached to the piston and the other touching the lacquer deposit. It measures the amount of voltage required to burn through the lacquer, thereby indicating the thickness of the deposit.

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HERE'S HOW LANE-WELLS RADIOACTIVITY WELL LOGGING

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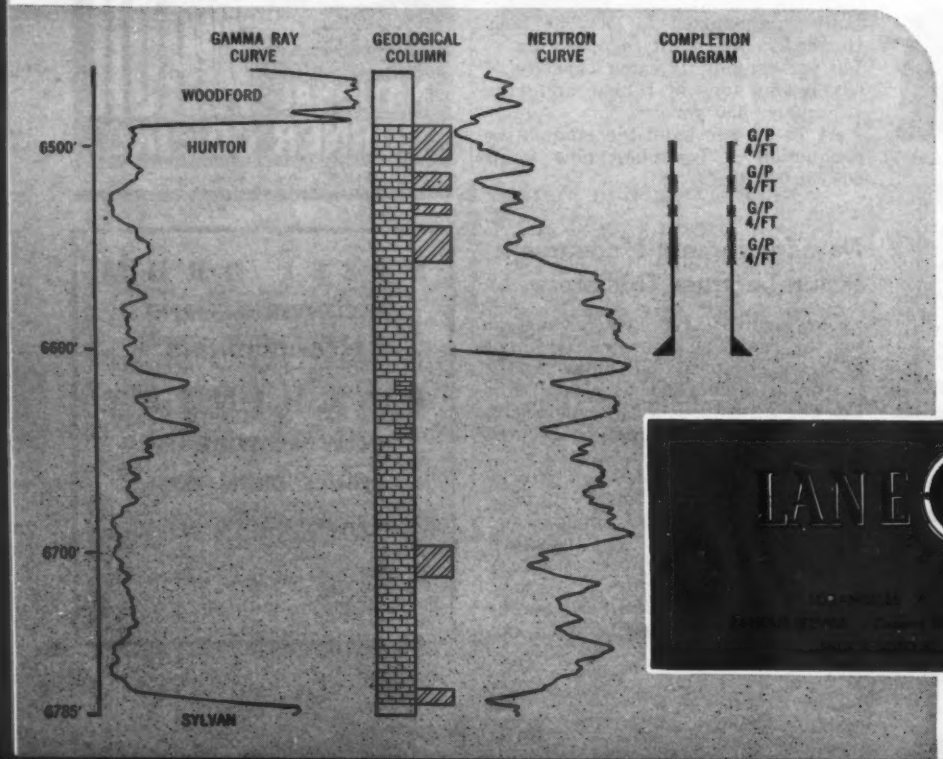
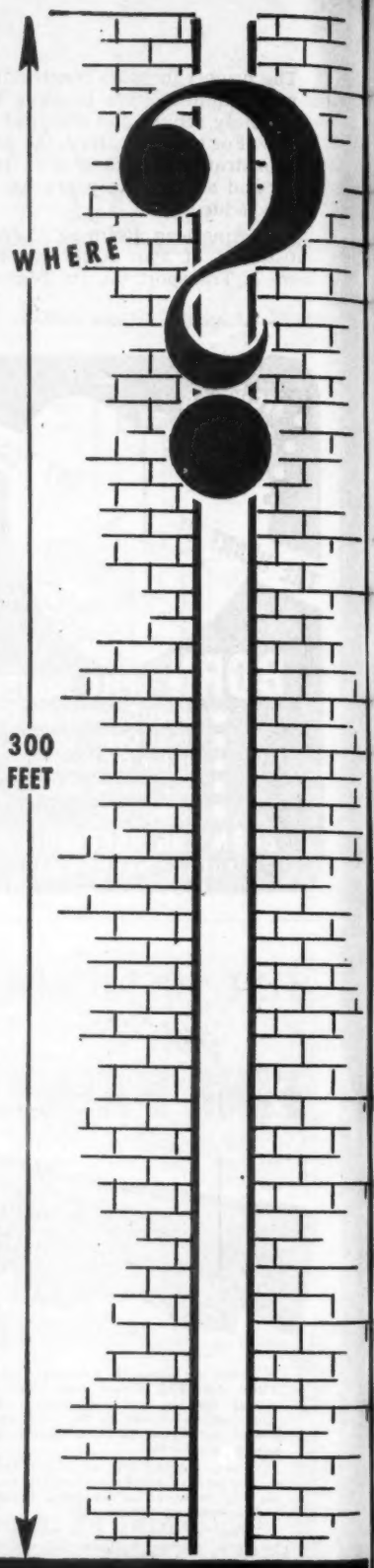
The Hunton limestone, principal producer in this Oklahoma field, is nearly 300 feet thick, and is productive only in part. To locate the porous zones, a Lane-Wells Combination Radioactivity Well Log was run in this well; four porous zones were clearly indicated at the top of the section. After perforating with 4 holes to the foot, and a 5,000 gallon acidizing job, the well flowed 1200 BOPD.





LANE WELLS

Among the

Drilling Contractors

New Drilling Firms

Miller & Grigsby is a new firm of rotary drilling contractors, with headquarters in Evansville, Ind. Owners are V. M. Miller and R. L. Grigsby, both widely experienced in all types of oil operations. The firm is starting operations in the tri-state area of Illinois, Indiana, and Kentucky.

Another new Evansville firm is White River Drilling Co., rotary drilling contractors, which will shortly open offices in the Budlock Building. Operating head of the firm is N. S. Demas.

Hunter Eakle has purchased a rig and will return to the tri-state area to engage in contract rotary drilling.

A.A.O.D.C. Hears Bulnes

A. C. Bulnes, of Shell Oil Co., Inc., was scheduled to address the bimonthly meeting of the Permian basin chapter of the American Association of Oil Well Drilling Contractors, September 13, at a dinner in Midland, Tex. Subject of the address was atomic physics. Also on the program was John Woodruff, of Austin.

Peel Drilling Co. and Nadel & Gussman report a big well at their 1 Fischer, in NE NE NW 36-21-13, 1 mile northwest of Fischer pool in Stafford County, Kansas. After treating the Arbuckle pay with 1,000 gal. of acid, the wildcat swabbed 100 bbl. of oil per hour, 2,250 ft. off bottom.

R. & S. Drilling Co. is contractor on the Carter Oil Co. 1 W. G. Leverzey, in NW NE NW 7-16n-17w, Oceana County, Michigan.

J. C. Means has contract to drill Sun Oil Co.-Sohio Petroleum Co. 2 Lapleau Estate, located in Section 49-10s-2w, in Midland area of Acadia Parish, Louisiana. Contract depth is 11,500 ft.

Harbar Drilling Co. and Delta Production Co. have an Arbuckle well in their 1 Westhusin, in NW NE SE 11-9-17, in Westhausin pool, Rooks County, Kansas. Total depth is 3,414 ft. with the tentative Arbuckle top at 3,404 ft., minus 1,400.

R. & S. Drilling Co. and **Merrill Drilling Co.** will drill the H. E. Walton 1 Jozef Petrovsky et al, in NW NW NW 23-18n-12w, Lake County, Michigan.

Aylward Drilling Co. and Derby Oil Co. have set casing to test a show of oil in the Arbuckle after having recovered a good show in a drill-stem test of the Lansing-Kansas City at their 1 Marcotte, in SE SE SW 18-9-19, Rooks County, Kansas, 1 mile north of Gick pool.

Big Chief Drilling Co. has been awarded contract to drill the Vaughey et al 1 Rachael Hux Burkett Unit, wildcat in NW NW 14-5n-7e, 1 mile west of Norfield, in Lincoln County, Mississippi. Contract is for 10,800 ft.

Pabco Drilling Co. and J. M. Huber Corp. have started making hole at their 1 Schmeidler, in SW SW NW 22-12-17, a mile north of Schmeidler pool in Ellis County, Kansas.

Milton Crow, Inc., has been awarded drilling contract on the Superior Oil Co. 1 Bradley Lumber Co., wildcat in SW NE NE 11-19s-10w, 1 mile north of Felsenthal, Ashley County, Arkansas. Contract is for 6,500 ft. or the Smackover lime. Operator was building roads.

Ford Oil Co. is drilling contractor on the Louis Zellman 3 Mrs. B. Zellman, in SW SE NW 25-4n-13w, Allegan County, Michigan.

Mendenhall Drilling Co. has started at the 1 Koslosky, in SW NW SE 12-21-3e, 1½ miles east of Wenger pool, in Marion County, Kansas.

Kemp Drilling Co. is contractor on the Harry W. Elliott 1 Ogden, wildcat in irregular section 42-6n-2w, Adams County, Mississippi. Location is 2 miles south of LaGrange field, and rotary was rigging up.

Stuart Godfrey is contractor on the Byron MacCallum 1 Esmond and Myrtle C. Whizennand, in NW NW SE 3-2s-13w, Van Buren County, Michigan.

W. C. Taggart, drilling contractor, will drill four wells for Michigan Consolidated Gas Co., of Grand Rapids. These are the 42 Troeger, 43

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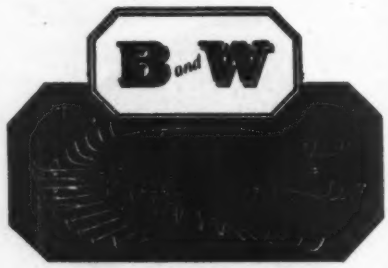

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Stoner, 44 Harris, and 41 Billingsley-Troeger, all in 8-14n-11w, Newaygo County, Michigan.

Gordon Drilling Co. has the contract to drill the Pure Oil Co. 1 Conn Melland, in SW NE 17-25n-4w, Crawford County, Michigan.

Newton Drilling Co. has made a new start in the Southwest Micawber area, of Oklahoma, spudding at the 1 J. L. Flowers-A, in SE SE NW 12-13n-7e.

B. O. Bunker will drill the Arthur F Etienne 1 Clarence J. Alexander, in SE NW SW 3-6n-15e, St. Clair County, Michigan.

Burr Lambert, Evansville, Ind., has started drilling on his 1 Harvey Hagler, in 18-10s-2w, Jackson County, Illinois. Test is scheduled to go to the St. Peter (Wilcox) sand at about 4,300 ft. Lambert has a 35,000-acre, almost solid lease block around this well.

James Collings will drill the T. F. Caldwell 1 Glen Cudney in SE SW SW 3-7n-2e, Shiawassee County, Michigan.

Stratton Drilling Co. has been awarded contract by Honolulu Oil Corp. to drill No. 1 Anderson-Tully Co., NE SE 14-9s-1w, in Desha County, Arkansas, north of Arkansas River. Location is on Big Island, an island which is surrounded by the Mississippi, Arkansas, and White rivers.

Eugene Hilliard is drilling contractor on the New Consolidated Petroleum Corp. 8 Evan Crowe, in NW NW SW 36-22n-2e, Ogemaw County, Michigan.

Martin Harris Drilling Co. will drill a Wilburn sand test in SW SE 28-12n-3e, northeast of production in Pickens field, Madison County, Mississippi, for Tip Ray.

Max Spidel will drill the Smith Petroleum Co. 2 Flora Cogswell, in NW NE SE 20-1s-16w, Van Buren County, Michigan.

W. D. Appling Drilling Co. has been awarded the contract to drill Sam G. Harrison 2 H. P. Stockton, in the IRR Survey, Section 7, Abstract 260, northwest of Louise townsite in Wharton County, Texas.

Ajax Drilling Co. is contractor on the C. L. Maguire, Inc., 1 Steve Zuder, in SW SE NW 6-13n-16w, Oceana County, Michigan.

Scott Drilling Co. is contractor on the Superior Oil Co. 3 Mabel L. Sippy et al, in NE NE SE 26-17n-16w, Mason County, Michigan.

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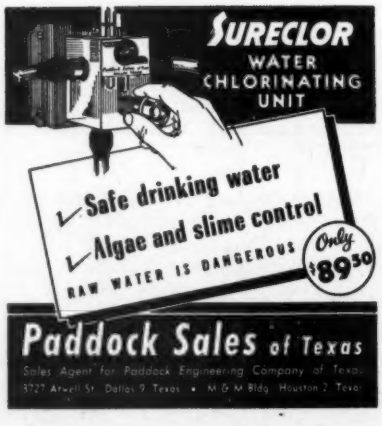

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Exploration and Drilling

New Developments at Benedum in West Texas

BENEDUM field in West Texas has a well flowing 19 to 28 bbl. per hour of 55°-gravity oil from the Pennsylvanian, reported gas oil ratio around 2,500 cu. ft. per barrel.

The well is Fred Turner, Jr., and J. M. Hewgley, Sr., 1 Barnett (formery Humble Oil & Refining Co. 1 Barnett), located 1,980 ft. from the north and 600 ft. from the east lines of Section 4, Block "Y," GC&SF Survey, or about 3 miles northwest of the Ellenburger discovery well of Benedum field. Humble drilled it originally to a total depth of 12,367 ft., in the Ellenburger, topped at 11,650 ft., and found the Ellenburger nonproductive. The project was then turned to Turner and Hewgley, with Humble reported retaining an override.

The new owners retested the Ellenburger, then set a retainer at 10,211 ft., and perforated the Pennsylvanian at 10,137-40 ft., 10,097-10,100 ft., 10,062-65 ft., and 9,982-85 ft. These intervals were then treated with 2,000 gal. of mud acid. After this had been pumped through perforations and into the formation, operators started swabbing. After the tenth pull of the swab, the well kicked off and started flowing.

For 5 hours the well was allowed to flow into pits to clean itself, then the stream was turned into the tanks. No gage was taken on the first 2 hours' flow to tankage. In the third hour, through a ¾-in. choke, the well gaged 21.2 bbl.; in the fourth hour it made 23.7 bbl. No gage was taken for the fifth and sixth hour; in the seventh and eighth hours, the gages were 19 and 20 bbl. respectively. The choke was then reduced to ¼ in. for the ninth and tenth hours, and the respective gages were 20 and 28 bbl. Then, with storage filled, the well was shut in. Flowing tubing pressure on the tubing was about 1,350 psi. and average gas oil ratio estimated at 2,500 cu. ft. per barrel.

It looks as though Benedum is going to be one of those colorful fields in which anything can and probably will happen. If it turns out to be a "bust," it will at least be a spectacular one. The new Pennsylvanian production may be a "flash in the pan" as some geologists, familiar with the area, think reasonably probable. It may, as other geologists hope, be a development of porosity and permeability in the Pennsylvanian, down flank from the top of the structure.

The high gravity of the oil at first suggests condensate, but the gas-oil ratio is so low that this is obviously not so. That marks the oil then as decidedly unusual.

If production from the new Pennsylvanian well holds up on a long continued test, some complex geological work lies ahead. The Pennsylvanian here is probably not a continuous, conformable formation. There were perhaps different periods of deposition, with periods of erosion, followed by more deposition, all within Pennsylvanian time. This could mean local unconformities. Other angles of the problem will occur immediately to all geologists. Benedum promises to be a geological headache for a long time to come. It may, of course, also turn out to be an oil producer that will make these headaches well worth while.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

ROCKY MOUNTAIN.—Bay Petroleum Corp. is reworking its 1 Christensen-Davis, Lodgepole wildcat, after gamma-ray log indicated casing had been cemented through the top of Dakota sand saturation. This well started leasing activity on the east side of the Powder River Basin, Wyoming, after testing oil on drill-stem test, but later production tests showed water. Bay will plug back and perforate casing for further tests. Atlantic Refining Co.'s 1 Tribal, wildcat, tested at the rate of 1,000,000 cu. ft. of gas from the Frontier and is being drilled ahead for tests of the Dakota and Morrison sands. In Colorado, initial tests at Texas Co. et al 2 Unit indicate that the well will make more than 150 bbl. of oil daily.

SOUTHWEST TEXAS.—A discovery in Copano Bay, Aransas County, State Tract 34, approximately 9 miles N-NE of Rockport, Phillips Petroleum Co. 1 Copano Bay-State gaged 160 bbl. of 41.5°-gravity oil in 23 hours through a ⅛-in. choke on an initial flow test, with tubing pressure of 1,250 psi., casing sealed.

SOUTH LOUISIANA.—Magnolia Petroleum Co. 1 Eugene Island, Block 62, 13 miles SE of Rabbit Island field, cemented 7-in. protection string at 2,215 ft. and is coring ahead below 2,267 ft. In the Vermilion area, Vermilion Parish, Pure Oil Co. is preparing to resume operations at 1 State Lease 880, Block 39, located 8 miles off the Vermilion Parish shore line and 14 miles SW of Pecan Island gas field. Hole was drilled to 6,581 ft. and shut down due to hurricane.

TEXAS GULF COAST.—Off Matagorda Peninsula approximately 3 miles, Tidelands Oil Corp. and Superior Oil Co. continue to drill in 1-483 State of Texas, in the Gulf of Mexico, 15 miles of Port O'Connor, Tex. Operators are reported to be drilling ahead below 6,500 ft.

CANADA.—The fire at Leduc's wild well, the Atlantic 3, has been extinguished. Since May this well has marketed over 1,000,000 bbl. of oil in addition to undetermined quantities lost or recently burned.

NORTH TEXAS.—Kingwood Oil Co. 1 Kirtner, on the north side of the Chico conglomerate pool, recovered 75 ft. of oil and gas-cut drilling mud in a sand, thought to be the Strawn, at 3,576-3,603 ft. Cities Service 2 Terrell is another record producer from the conglomerate.

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★ American Exploration Company (U. S. A.) Marine

TULSA, OKLAHOMA, U. S. A.

KANSAS

Stafford County Outpost Is Good Arbuckle Well

NADEL & GUSSMAN and Peel Drilling Co. 1 Fischer, NE NE NW 26-21s-13w, about 1 mile northwest of Fischer pool in Stafford County, swabbed 100 bbl. per hour from the Arbuckle following acid treatment. The well was drilled to 3,642 ft. with the Arbuckle called at 3,637 ft. On an early report the well had 3,200 ft. of oil in the hole in 12 hours and swabbed 125 bbl. of oil in 10 hours. The Arbuckle pay was then treated with 1,000 gal. of acid and the well swabbed 100 bbl. per hour.

Delta Production Co. and Harbar Drilling Co. have an Arbuckle well in Westhusin pool at 1 Westhusin, NW NE SE 11-19s-17w, Rooks County. Other production in the pool is from the Lansing-Kansas City. The Arbuckle well recently swabbed 8 bbl. of oil per hour from the pay called at 3,404 ft. Total depth is 3,414 ft.

Barber County's De Geer pool which was opened in May has two new maximum wells. This brings the number of maximum wells in the pool to five out of the seven oil wells completed. The two new wells, rated with bottom-hole bomb tests, are: Lion Oil Co. 6 De Geer, SE NW SW 2-33s-15w; and Sinclair Prairie Oil Co. 1 Hazel De Geer, SE SE NW 2-33s-15w. Both wells produce from the Viola.

Roberts & Murphy and Rine Drilling Co. have completed 1 Earlywine, 36-29s-14w, Pratt County, to add Simpson production in the area north of Clara gas pool where production is from the Viola. The Simpson sand was called at 4,456 ft. in the Earlywine well and production, through perforations at 4,494-98 ft., is 320 bbl. of oil and 1,150,000 cu. ft. of gas per day.

Derby Oil Co. and Aylward Drilling Co. have set casing for tests at 1 Marcotte, SE SE SW 19-9s-19w, southwestern Rooks County. A drill-stem test of the Lansing-Kansas City at 3,360-77 ft. recovered 780 ft. of oil and oil-cut mud plus 30 ft. of salt water. Casing has been set on top of the Arbuckle at 3,548 ft. and operator will also test a reported show in that formation. Total depth is 3,555 ft.

Included in the 62 new locations for the week were 12 new spots for Butler County and eight for Rice. Rooks, Russell, and Stevens counties accounted for five each.

SUCCESSFUL KANSAS WILDCATS

Ellis County: Westgate-Greenland Oil Co. et. al 1 Simpson, NW NW SE 9-11s-17w, pumped 4 bbl. oil per day from Lansing at 3,118-24 ft., 3,174-77 ft. and 3,219-24 ft.; Heebner 2,996 ft., conglomerate 3,303 ft., Simpson 3,340 ft., Arbuckle 3,386 ft., TD 3,496 ft.

Sedgwick County: J. P. Gaty 1 Brown, NE NW NE 30-26s-3e, produced 3,000 bbl. of oil per day from Burgess sand at 2,957-61 ft.; Kansas City 2,513 ft., TD 2,961 ft.

KANSAS WILDCAT FAILURES

Barton County: C. E. Ash et al 1 Davis "A," SE SW NW 5-17s-14w, dry, TD 3,559 ft., anhydrite 987 ft., Topeka 2,948 ft., Heebner 3,185 ft., lower Kansas City 3,256 ft., conglomerate 3,496 ft., Arbuckle 3,529 ft.

Cowley County: Morrison Drilling Co. 1 Brandenberg, NE NE SE 8-34s-5e, dry, TD 3,642 ft., Kansas City 2,619 ft., Mississippian 3,183 ft.

Harvey County: Mid-Plains & El Dorado Refining & Veeder 1 Dunkleberger, NW NW NW 16-22s-1w, dry, TD 3,533 ft., Kansas City 2,337 ft., Lansing 2,354 ft., Mississippian 2,975 ft., Kinderhook 3,318 ft., Misener 3,351 ft., Hunton 3,359 ft., Maquoketa 3,408 ft., Viola 3,468 ft., Simpson dolomite 3,498 ft., Simpson sand 3,514 ft.

Marion County: Seibel et al 1 Lalouette, NE NE SE 10-21s-5e, dry, TD 2,266 ft., Kansas City 1,535 ft., Mississippian 2,105 ft., Viola 2,264 ft.

Rooks County: Nadel & Gussman 1 Miller, SW SW NW 28-10s-19w, dry, TD 3,811 ft., anhydrite 1,585 ft., Topeka 3,185 ft., Heebner 3,404 ft., Dodge 3,424 ft., Lansing 3,444 ft., basal Kansas City 3,661 ft., conglomerate 3,691 ft., Arbuckle 3,781 ft.

Sedgwick County: Aladdin Petroleum Co. 1 Neises, SW SW NE 19-28s-1w, dry, TD 3,746 ft., anhydrite 405 ft., Kansas City 2,796 ft., basal Kansas City 2,990 ft., Mississippian 3,396 ft., basal Mississippian 3,634 ft., Simpson 3,705 ft.

Wabaunsee County: Amerada Petroleum Co. 1 Bolton, SW SW SE 32-10s-10e, dry, TD 1,720 ft., no tops reported.

Woodson County: S. E. Linkins 1 Church, NW SE SW 27-24s-15e, dry, TD 1,464 ft., Mississippian 1,423 ft.

OKLAHOMA

Good Extensions for Northeast Elmore Pool

NORTHEAST Elmore pool in Garvin County has been extended both to the north and east by recent wells. Carter Oil Co. 1 Robinson-Blanton, NW SW NW 24-2n-2w, accounted for the push to the east with production from the Gibson sand at 6,436-50 ft. Well flowed about 20 bbl. per hour for 8 hours through 3/8-in. choke. Phillips Petroleum Co. has added to the field on the north side of the pool with production at 1 Clara, NW SE SE 4-2n-2w. Well was swabbed in after operator perforated at 6,594-6,624 ft. and flowed 192 bbl. in 11 hours through ½-in. choke.

Creekmore-Rooney Co. has set casing for a test of the Prue sand at 1 Dye, SW SW SE 13-14n-5e, Lincoln County. Well was carried to the Bartlesville but no shows were found in that zone. Operator plugged back to 3,400 ft. and set casing to 3,296 ft. for a test of the Prue. This zone had good shows in cores taken at 3,300-81 ft.

The recently opened South Haydenville pool in northeastern Okfuskee County has a new oil well, reported to be from the Gilcrease. Mid-Continent Petroleum Co. is testing this offset to the pool opener. The new well, 2 Holderby, SW NE SW 29-13n-10e, was drilled to a total depth of 2,915 ft. After plug was drilled from casing, set at 2,897 ft., the well was washed in to flow 12 to 15 bbl. per hour through tubing choke. On an early drill-stem test, the recovery was 2,250 ft. of oil from pay at 2,906-19 ft. The pool opener produced from the Gilcrease but an east offset missed Gilcrease production to be completed in the sandy Wapanucka.

The recently opened Southwest Alabama pool in Hughes County has two new starts. Frank B. Murta has set surface pipe at 2 Ellis, SW NE SE 6-9n-11e, an east offset to the pool opener. Amerada Petroleum Co. has staked 1 Edward Bradley, NW SE SE 6-9n-11e, for a southwest diagonal offset to the opener. The discovery well, Murta 1 Ellis, SE NW SE 6-9n-11e, was completed with an initial production of 100 bbl. per day from the Cromwell sand at 3,097-3,110 ft.

OKLAHOMA SUCCESSFUL WILDCAT

Cleveland County: Halliburton 1 Comfort Ranch, SW SW NW 4-8n-1e, pumped 105 bbl. of 38.6°-gravity oil per day from Bartlesville at 5,800-30 ft., TD 5,843 ft.

OKLAHOMA WILDCAT FAILURES

Cleveland County: Carter 1 Vaughn, C SW NW 31-9n-1w, dry, TD 7,621 ft., no tops reported.

Comanche County: Fisher 1-B Fullbright, SW SW NW 9-3n-11w, dry, TD 396 ft., no tops reported.

Cotton County: Slemaker 1 Eschler, SW SW NE 31-3s-11w, dry, TD 2,306 ft., Megargle 2,257 ft.

Hughes County: Diamond 1 Spillers, NW SW NE 20-7n-9e, dry, TD 3,052 ft., no tops reported.

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BAIRD MFG. CO.—TULSA

Sherrod 6 Barnard, SW NW NE 24-8n-8e, dry, TD 3,357 ft., no tops reported.

Jefferson County: Olson 1 Murphy, NW NW SW 12-5s-5w, dry, TD 6,813 ft., shale 6,735 ft.

Lincoln County: Herndon 1 Loomis, NE NE NE 1-16n-3e, dry, TD 4,240 ft., Checkerboard 3,186 ft., conglomerate 3,217-70 ft., Big lime 3,640 ft., Oswego 3,701 ft., Prue 3,820 ft., Skinner 3,864 ft., Red Fork 4,045 ft.

Osage County: Collins 1 Osage, SW SW NE 25-22n-11e, dry, TD 1,681 ft., Oswego 1,012-60 ft., Bartlesville 1,391-1,553 ft., Burgess 1,665-70 ft., Mississippian 1,670 ft.

Oliphant 1 Osage, SW SE SE 19-26n-5e, dry, TD 3,312 ft., Layton 2,365 ft., Checkerboard 2,731 ft., Big lime 2,853 ft., Oswego 2,971 ft., Mississippi chat 3,260 ft., Mississippi lime 3,272 ft.

Pontotoc County: Kirkpatrick 1 Busby, NE SW SW 35-5n-8e, dry, TD 3,021 ft., Calvin 255-540 ft., upper Allen 683 ft., Allen 790 ft., Gilcrease 3.000 ft.

Pottawatomie County: Smith 1 State, NE NE NE 36-8n-3e, dry, TD 4,810 ft., no tops reported.

Falcon 1 Teyton, NE NE NW 22-9n-2e, dry, TD 6,073 ft., Belle City 3,390 ft., Hogshooter 3,888 ft., Checkerboard 4,122 ft., Woodford 5,335 ft., Hunton 5,355 ft., Sylvan 5,650 ft., Viola 5,765 ft., dense 5,820 ft., dolomite 5,855 ft., second Wilcox 6,048 ft.

Harper 1 Youngblood, NE SE NW 11-11n-4e, dry, TD 5,567 ft., Sylvan 5,298 ft., Viola 5,386 ft., first Wilcox 5,472 ft., second Wilcox 5,554 ft.

Seminole County: Sadler 1 Kiker, NE NE SE 20-10n-7e, dry, TD 3,810 ft., Booch 3,627 ft., Gilcrease sand 3,692-3,706 ft., second Gilcrease 3,714-30 ft., Union Valley-Cromwell 3,755 ft.

Stephens County: Hernstadt 1 Gentry, SW SE NE 4-1s-5w, dry, TD 8,250 ft., no tops reported.

Brown 1 Montgomery, SW SW SE 6-2s-8w, dry, TD 2,850 ft., lime 2,756-72 ft., sand 2,775-83 ft.

Tillman County: Kingery 2 Johnson, NW NE NW 14-5s-15w, dry, TD 2,000 ft., conglomerate sand 1,122-65 ft., sands 1,350-85 ft., 1,672-82 ft., 1,782-94 ft., and 1,802-06 ft.

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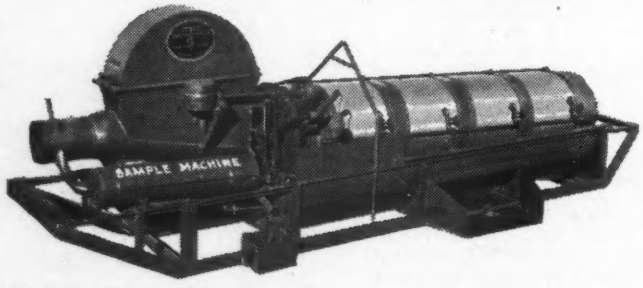

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SOUTH LOUISIANA

Union Oil Opens Bay Junop Field

NEW ORLEANS.—Union Oil Co. of California 1-9 State-LLE, discovery well of Bay Junop field, 27-21s-14e, Terrebonne Parish, flowed a potential of 130 bbl. of oil per day through a 9/64-in. choke, gas-oil ratio 450, gravity 37.7°, with tubing pressure of 650 psi. Union is testing the 2-9 State Lease 725, LL&E Unit, in the Bay Junop discovery area, 27-21s-14e, at a total depth of 4,593 ft., with 5½-in. casing set at 3,800 ft.

Roeser & Pendleton, Inc., et al, have cemented a 5-in. liner in the 1 Columbia Land & Timber Co., and are preparing to run a drill-stem test. This wildcat is in Section 27-6s-13w, due south of the Bancroft field production in Beauregard Parish. Drill-stem test from 7,571-81 ft., using ¼-in. chokes, flowed 40°-gravity oil and some salt water. While pulling the tool, the well caught fire but was controlled. Two sands showing gas and condensate have been encountered at 10,204-220 ft. and 10,239-249 ft. Total depth is 11,090 ft. and the liner has been set at 11,078 ft.

In the Vermilion area, Vermilion Parish, Pure Oil Co. 1 State Lease 880, Block 39, is preparing to resume operations after shut down due to hurricane. Total depth is 6,581 ft. This venture is located 8 miles off the Vermilion Parish shore line and 14 miles southwest of Pecan Island gas field.

Sun Oil Co. 1 Lyric Realty & Parking Co., 66-15s-15e, opened a new pool in Lafourche Parish, flowing 166 bbl. of 34.6°-gravity oil per day through a ⅛-in. choke. Total depth is 11,131 ft., and production is through perforations at 10.078-090 ft.

SOUTH LOUISIANA SUCCESSFUL WILDCATS

Lafourche Parish: New oil discovery, Chacahoula area—Sun Oil Co. 1 Lyric Realty & Parking Co., 66-15s-15e, TD 11,131 ft., top sand 10,078 ft., perforations 10,-078-090 ft., IP: 166 bbl. oil per day through ⅛-in. choke, GOR 568, TP 1,100 psi., gravity 34.6°, 0.1 per cent water.

Terrebonne Parish: New oil pool, Bay Junop—Union Oil Co. of Calif. 1-9 State-LLE, 27-21s-14e, TD 4,777 ft., perf. 4,012-20 ft., IP: 130 bbl. oil per day through a 9/64-in. choke, GOR 450, TP 650 psi., gravity 37.7°, no water.

New oil pool, Lake Hatch—Union Oil Co. of Calif. 1 Louisiana Land & Exploration Co., 8-18s-16e, 7 mi. SW of South Houma gas field, TD 11,203 ft., top sand 7,896 ft., perf. 7,896-7,902 ft., IP: 235 bbl. oil per day through 9/64-in. choke, GOR 800, TP 1,250 psi., gravity 35.7°, 0.1 per cent water.

Gas discovery, Ship Shoal area—Magnolia Pet. Co. 1 Ship Shoal Block 72, Lease 766, 8 mi. S of Coon Point and in Gulf of Mexico, TD 9,355 ft., salt, top sand 7,266 ft., perf. 7,266-76 ft., IP: 1,992,000 cu. ft. gas per day through 12/64-in. choke, shut in, TP 2,950 psi., psi., CP 2,990 psi., 58° gravity, no water.

SOUTH LOUISIANA WILDCAT FAILURES

Cameron Parish: Sohio Pet. Co. 1 Coastal Farms Co., 29-12s-6w, off south flank of Chalkley field, dry, TD 10,009 ft.

Lafourche Parish: The California Co. 1 Burkenroad Inv. & Realty Co. 2, 100-17s-20e, 3½ mi. E of Valentine field production, dry, TD 10,500 ft.

LA.-ARK.

Oil Shows Decrease In Ruston Deep Test

SHREVEPORT. — Crescent Drilling Co. 1 C. M. Matthews "Unit," Ruston gas field deep test in Lincoln Parish, has apparently run out of oil shows in the lower sections of the Cotton Valley formation. The well had found various shows and odor and some 38°-gravity oil in cores at 8,893-98 ft., and recovered 15 ft. of light green oil on a drill-stem test at 8,984-95 ft. However, 67-minute drill-stem test of perforations from 9,002-06 ft. had no pressure and recovered 60 ft. of mud with no shows. Another test of the interval between 8,986-98 ft., open 3 hours, produced a slight blow but had no recovery and no bottom-hole pressure. Operators reperforated between 8,986-98 ft. and were preparing to swab.

In the Shongaloo area of Webster Parish, Barnsdall Oil Co. 1 Sykes, 7-22n-9w, cored 30 ft. of shale and lime with no shows, and was drilling below 9,111 ft. in the Cotton Valley. Hunt Oil Co. 1 R. P. Campbell, 14-23n-10w, projected to 11,000 ft. in the North Shongaloo field, was drilling below 7,603 ft. Stanolind & Continental 1 Viola Mitchell "Unit," 31-23n-9w, was fishing for washover pipe at 10,452 ft. with total depth still at 10,482 ft.

The California Co. 2 Maxey, 32-18n-1e, Ouachita Parish wildcat, continued testing the Vaughn sand of the Cotton Valley. A drill-stem test of perforations between 9,400-15 ft., open 7 hours, had a surface pressure of 820 psi., and flowing bottom-hole pressure of 1,400 psi. Recovery was 150 ft. of salt water, plus the water cushion. Retainer was set at 9,380 ft. and the hole squeezed.

Phillips Petroleum Co. 1 C. Ellerbe, 9,000-ft. operation in the old Caspiana gas field of Caddo Parish, 17-15n-12w, was drilling in the lower Glen Rose at 4,658 ft. Official data were not released, but reports indicated it would make a small gas well at 4,550-4,600 ft.

Carter Oil Co. 1 Brown Paper Mill, 18-11n-13w, 2 miles southeast of the Spider gas field, DeSoto Parish, killed the gas flow found in the Paluxy around 2,894 ft. and was drilling in Glen Rose at 3,627 ft. Northwest of the field, Kerr-McGee 1 Lumber, 35-12n-15w, had total depth in Travis Peak at 6,528 ft. and stopped to run casing. It had a gas show last week in the lower Glen Rose around 6,094-98 ft. Robertson Stores 1 T. T. Tolson, 1-13n-16w, previously reported as Dorothy Allen 1 Tolson, had no shows in 5 hours of swabbing, after acidizing perforations at 6,500-04 ft. in the Pettit. On the south edge of the Bull Bayou field, Union Producing Co. 1 Mansfield, 4-11n-11w, was coring the lower Glen Rose below 6,354 ft., with no shows reported.

In the new College Hill field, Columbia County, Arkansas, McAlester Fuel Co. 1-A Polk, 19-15s-20w, was drilling in the Cotton Valley at 5,014 ft. Lee & Burnett 1-A Ollar, Smackover wildcat southwest of Hope in 27-13s-25w, Hempstead County, reported a drilling break at 4,410 ft., drilling 6 minutes per foot. Operators circulated for 30 minutes but had no shows. It was drilling ahead below 4,455 ft.

Stanolind 1 Bodcaw, 29-19s-23w, Lafayette County, was below 9,365 ft. There was some question as to whether or not it is still in the Cotton Valley formation. Stanolind 1 Union Saw Mill, 18-19s-24w, was drilling below 8,141 ft.

Houston Oil Co. 1 Boyd, 17-13s-17w, Ouachita County, recovered salt water on a drill-stem test of the Blossom sand at 2,015-30 ft. In Union County, Carter Oil Co. 1 Ethredge, 20-19s-16w, had sand with broken oil stains in drilling at 8,027 ft. R. M. Crabtree 1 Bullock, 30-18s-14w, reported oil shows in the Nacatoch sand at 2,100-01 ft., 2,069-85 ft., and 2,085-2,101 ft. Total depth is 2,171 ft.

NORTH LOUISIANA WILDCAT FAILURES

Claiborne Parish: A. H. Baugh 1 fee, SW

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NW SW 26-20n-8w, dry, TD 2,311 ft.

DeSoto Parish: E. C. Laster 1 Perkins-McLaurin, SE SW 25-15n-14w, dry, TD 6,645 ft., Pettit 5,883 ft., Travis Peak 6,438 ft., elev. 232 ft.

Sabine Parish: Hassie Hunt Trust 1 Whitney Corp., SE NW 19-10n-13w, dry, TD 6,724 ft., drill-stem tests at 3,326-31 ft. and 3,036-46 ft. recovered drilling mud, no shows.

ARKANSAS WILDCAT FAILURES

Clark County: H. T. Ross 2 Ross, NW SW NW 32-10s-20w, dry, TD 1,723 ft. in shale.

Little River County: J. K. Wadley 1 Dierks Lumber & Coal Co., approximately C 14-12s-31w, dry, TD 3,030 ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) SUCCESSFUL WILDCATS

Jones County: Ungren & Frazier 1 Sellers, Wm. Delk Sur., 4 mi. SE Hawley, pumped 32 bbl. of 39°-gravity oil a day, lime 1,755-62 ft., TD.

Taylor County: Geochemical Surveys 1 D. P. Moore, Lot 14, League 147, Grimes CSL, 1½ mi. SE Merkel, flowed 90 bbl. of 41°-gravity oil a day, 14/64-in. choke, TP 40 psi., GOR 200 cu. ft., Flippen lime 2,552-60 ft., TD 2,868 ft., elev. 1,862 ft.

Throckmorton County: R. S. LeSage 1 Will McKeichan, Comanche Indian Reservation Sur., 3 mi. SW Throckmorton, flowed 150 bbl. of 44°-gravity oil in 12 hours, ¼-in. choke, CP 1,400 psi., TP 900 psi., Mississippian 4,480-4,510 ft., TD.

Fred M. Manning 1 Roy H. King, N line Sec. 268, BBB&C Sur., 8 mi. N Throckmorton, flowed 192 bbl. of oil a day, 16/64-in. choke, Caddo 4,695-4,710 ft., TD, TP 200 psi.

NORTH CENTRAL TEXAS (DISTRICTS 9 & 7-B) WILDCAT FAILURES

Archer County: D. S. Johnson 1 F. A. Prideaux, Sec. 1,863, TE&L Sur., 8 mi. SW Windthorst, dry, TD 3,055 ft.

Brown County: W. C. Estes 1 H. F. Mcbride, Sec. 10, Blk. 27, Jessee Dickinson Subd., 1 mi. N May, dry, TD 3,487 ft., perforated 2,315-54 ft., acidized, estimated 10 bbl. oil a day, dropped tubing in hole and junked.

Callahan County: W. H. Briant 1 W. E. Milliorn, Sec. 20, BBB&C Sur., 6 mi. SW Clyde, dry, TD 1,845 ft.

Ungren & Frazier 1 T. M. Allen, Sec. 19, BBB&C Sur., 6 mi. SW Clyde, dry, TD 1,363 ft., sand with oil show 1,320-25 ft.

Clay County: J. S. Abercrombie and H. R. Cullen 1 A. H. Jones, Sec. 21, MEP&P Sur., 5 mi. E Petrolia, dry, TD 4,325 ft.

Republic Natural Gas Co. 1 Lorena Kinder "B," Blk. 2, Clark & Plumb Subd., 4½ mi. NE Windthorst, dry, TD 4,213 ft.

N. CENTRAL TEXAS

Chico Field Continues Rapid Development

WICHITA FALLS.—The Chico field of Wise County continues to show a steady growth, with each new completion over the past 2 weeks showing for the field's highest potential. Cities Service Oil Co. 2 Terrell, southeast offset to Kingwood Oil Co.'s 2 Garrett, most northwesterly well in the field, had casing perforated from 5,330-75 ft. and was making completion tests. During the first hour the well flowed 80.16 bbl. of oil through ¾-in. choke, followed by flows of 63.46 bbl. and 65.13 bbl. the second and third hours. Gas-oil ratio was 470 cu. ft.

Signal Oil & Gas Co. 1 Jack Daly, J. F. Williamson Survey, 3 miles south of Cottondale in southwest Wise County, was waiting on orders after recovering salt water and drilling mud on a drill-stem test of the Ellenburger from 6,780-6,819 ft. Length of the test was not reported. An earlier test to total depth of 6,522 ft. indicated approximately 500,000 cu. ft. of gas a day. Top of the Ellenburger was 6,505 ft.

A new Ellenburger project has been staked in northern Wise County by Cities Service as its 1 Monk, 467 ft. out of the southwest corner of Block 7, Bell County School Land Survey. Location is 2 miles northeast of the town of Alvord and about 10 miles northeast of the Chico field, on a block of 4,000 acres. Contract depth is 8,000 ft. Two and one-half miles south of Crafton and west of the Chico area, Big Bear Oil Co. made location for its 1 T. J. Hunt for a test to 5,000 ft. It is in the M. Mackey Survey, Abstract 517.

In Clay County, S. D. Johnson 1 Holt, T. Morehead Survey, ¾-mile south outpost to the Acme field, prepared to acidize after recovering some 4,500 ft. of oil on a drill-stem test of the Ellenburger through casing perforations from 5,778-5,814 ft. After acidizing, it was to test lower in the hole.

A new oil discovery was indicated in Cooke County at Tex Harvey Oil Co. 1 Haynes, Henry Baker Survey, about 1 mile northeast of the Woodbine field. A drill-stem test in sand from 4,286-91 ft. recovered 210 ft. of clean oil. It drilled additional sand with oil shows from 4,291-4,303 ft., and had oil stains from 4,522-28 ft., although a test of the latter interval recovered salt water and drilling mud. Another section of sand from 4,528-70 ft. was not tested. Total depth is 4,815 ft. Casing will be run to 4,400 ft. and perforated around 4,300 ft. for completion tests.

In Throckmorton County, L. H. Choate and Russell Maguire 1 Clementine Hardy, Block 259, BBB&C Survey, topped the Caddo at 4,525 ft., then drill-stem tested from 4,525-35 ft. In 1 hour it recovered 575 ft. of oil, plus 90 ft. of oil-cut mud and 90 ft. of drilling mud. It drilled to 4,565 ft., ran electrical log and set 7-in. casing on bottom. Operators perforated at 4,562-65 ft. but were to squeeze and reperforate.

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Coleman County: L. A. Hedrick and A. R. Dillard 1 J. B. Flores, Jonathan Scott Sur., 1½ mi. NW Santa Aanna, dry, TD 1,947 ft.

Rose & Lebus Drilling Co. 1 Sealy & Smith, Sec. 55, GH&H Sur., 9 mi. S Talpa, dry, TD 3,517 ft., Gardner sand 3,135-39 ft., Gray sand 3,320-38 ft., Caddo 3,400 ft.

Eastland County: Price, Crawley & Nicol Crawford 1 Bessie L. Shaw, Erath CSL Sur., 6 mi. SW Carbon, dry, TD 3,084 ft., Caddo 2,524 ft., Marble Falls 2,960 ft., Ellenburger 3,602 ft.

Fisher County: Skelly Oil Co. 1 Nina R. Wheeler, Geo. Creath Sur., SE corner of county, dry, TD 4,685 ft., Dotham 2,480 ft., Flippen 2,848 ft., Swastika 3,275 ft., Reef 4,680 ft.

Haskell County: W. P. Karr Trustee 1 Pierson, Sec. 15, H&TC Sur., 4 mi. S Haskell, dry, TD 4,560 ft., Palo Pinto 3,670 ft.

Jones County: S. B. Roberts 1 Mrs. Jane W. Hoyt, Sec. 20, T&P Sur., 3 mi. NW Hawley, dry, TD 2,652 ft., Swastika lime 2,622 ft.

Montague County: T. F. Hunter 1 Heaton Bros., O. Buckman Sur., 10 mi. N Nocona, dry, TD 1,820 ft.

Taylor County: Drilling & Exploration Co. 2 W. B. Hill, Lot 16, League 146, Grimes CSL, 4 mi. SE Merkel, dry, TD 2,885 ft., Gunsight 2,848 ft., Reef 2,872 ft.

Throckmorton County: Grisham Hunter Corp. 3 R. W. Kelly Estate "A," Sec. 51, Comanche Indian Reservation, 9 mi. SW Throckmorton, dry, TD 672 ft.

Young County: S. M. Parke 1 C. A. Ferguson, B. B. Miller Sur., 3½ mi. S Markley, dry, TD 550 ft.

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TEXAS GULF COAST

Possible Pool Opener Flows Oil Cleaning Out

HOUSTON.—Lloyd H. Smith and McKay Donkin 1 J. C. Allen, potential oil field discovery 1½ miles west of the West Withers production in Wharton County, flowed high gravity oil on the latest test. Total depth is 7,306 ft., with 5½-in. production string cemented at 7,217 ft. On initial test, through perforations at 7,187-91 ft., using ¼-in. bottom and 6/64-in. choke on top, with 2,000-ft. water blanket, test came in blowing gas and mud, then began making oil with slugs of mud. Working pressure is 1,025 psi. These perforations were squeezed and pipe has been reperforated from 7,189-91 ft. where the well is cleaning, flowing high gravity oil and showing approximately 10 per cent water on the clean out. Tanks are being constructed on the location. This test is in the Mark Weiss Survey, Section 22.

The Midfield pool in Matagorda County has been extended 3,000 ft. to the southwest by Sun Oil Co. 2 Stovall, in the I&GN Survey, Section 4, Block 6. Drilled to 9,175 ft. with 7-in. casing cemented at 9,175 ft., on 24-hour potential gage the well flowed 130 bbl. of 45.3°-gravity oil per day through a 7/64-in. choke at 9,132-35 ft. Flowing pressure on tubing was 2,220 psi. Gas-oil ratio was 1,400, showing 0.1 per cent water content.

Great Lakes Carbon Corp. 1 M. C. Oldam, in the William Paulding Survey, Abstract 368, Lavaca County, has extended the Garwood field area. Total depth is 10,056 ft., and through perforations at 3,118-24 ft. in Frio sands, it flowed 3,500,000 cu. ft. of gas per day through a ¼-in. choke with 1,200 psi. flowing pressure on the tubing.

In the Gulf of Mexico, approximately 3 miles off the Matagorda Peninsula, Matagorda County, Tidelands Oil Corp. and Superior Oil Co. continue to drill ahead below 6,500 ft. in the 1-483 State of Texas.

TEXAS GULF COAST (DISTRICTS 2 & 3) SUCCESSFUL WILDCATS

Goliad County: New pay, Hords Creek—Brown & Wheeler D-6 J. R. Kauffman, Pedro Trevino Gr., ½ mi. NE of the 5,050-ft production, top pay 4,919 ft., TD 4,960 ft., perf. 4,919-23 ft., IP: 130 bbl. oi lper day through a 10/64-in. choke, GOR 1,115, TP 1,380 psi., gravity 47°, no water.

Liberty County: New gas-condensate pool—William Hebert Hunt Tr. Est. 1 Welch & Silva, T&NO Sur., Sec. 11, 2 mi. N of Cottonwood field production, TD 8,296 ft., top sand 7,908 ft., perf. 7,908-26 ft., IP: 3,160,000 cu. ft. gas per day and 77 bbl. condensate per day through a ¼-in. choke, GOR 40,800, TP 2,960

TEXAS GULF COAST (DISTRICTS 2 & 3) WILDCAT FAILURES

Brazoria County: Harold Ling-Goldrus Drilling Co. 1 J. S. Wilson, P. D. McNeel League 6, 2 mi. W of Damon, dry, TD 7,480 ft.

Calhoun County: Quintana Pet. Corp. B-1 Beulah Kingswell - Smith, Jos. Yeomans Sur. 6, 14½ mi. SW of Port Lavaca, dry, TD 8,970 ft.

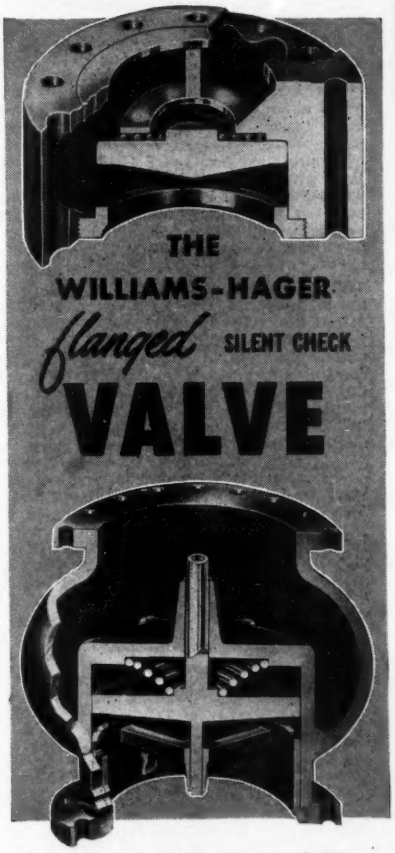
Jackson County: Placid Oil Co. 1 Conrad Gwosdz, Blk. 44 of J. M. Bennett 1st Subd., Valentin Garcia Gr., 4 mi. W of Vanderbilt, dry, TD 6,542 ft.

Victoria County: Taylor Refg. Co. 1 M. L. Rivers, Lot 100, Henderson - Pickering Subd., SA&MGRR Sur., 2 mi. NE of Bloomington, dry, TD 6,500 ft.

Southern Minerals Corp. 1 E. P. Stubblefield, SA&MGRR Sur., 2 mi. NE of Bloomington, dry, TD 5,515 ft.

Wharton County: W. A. Clark 1 K. F. Wendel, SA&MG Sur., Sec. 21, 2 mi. W of Hillje, dry, TD 6,017 ft.

STOP WATER HAMMER



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MISSISSIPPI

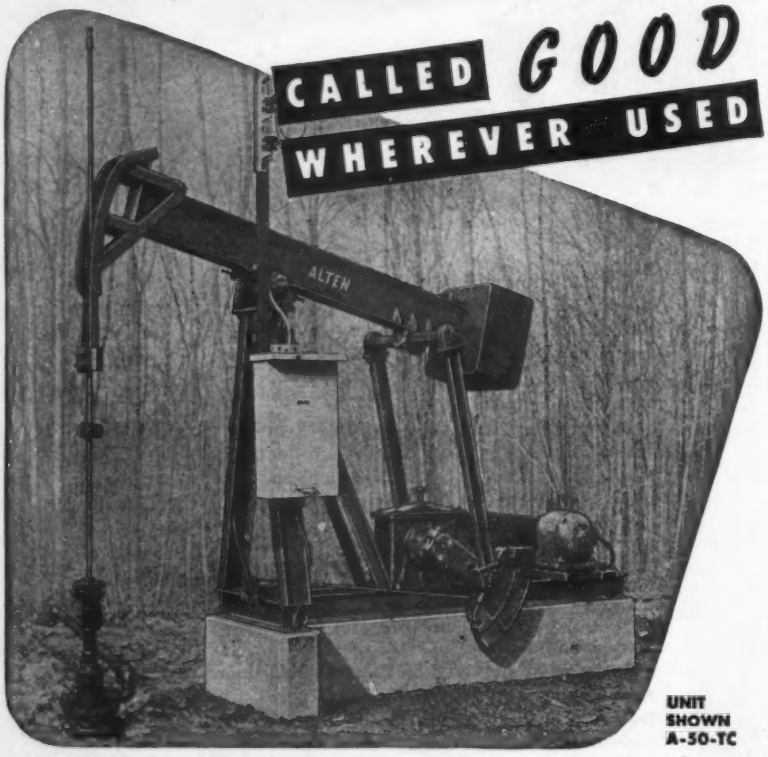
LaGrange Pool May Get Successful Sparta Well

JACKSON.—In La Grange field, Adams County, Kingwood Oil Co. 1 F. Maud Stanton, 83-7n-2w, is coring and testing in the Sparta zone. A drill-stem test from 3,116-20 ft., using ¼-in. top and ⅜-in. bottom chokes, with 500-ft. water cushion, recovered 315 ft. of heavily oil-cut mud. 405 ft. oil slightly cut with mud, and 5 ft. of sand, in 30 minutes. Bottom part of the 405 ft. of oil had a salty taste, but no free salt water was present. Estimated gravity of the oil was 20-25°. Bottom-hole flowing pressure was 1,000 psi. Operators then cored from 3,120-27 ft., recovering 2 ft. of saturated sand. Another drill-stem test was run and recovery from this test, which opened 7 ft. more sand section below the first test, was 1,630 ft. of salt water. From the cores and drill-stem tests, the water level for this Sparta horizon is being called at 3,120 ft. It now seems that the only way to successfully complete a well from this Sparta zone would be to drill into the sand without drilling below the water level, or by drilling at a higher structural position.

Roeser & Pendleton, Inc., 9 R. Batson et al, 19-1n-16w, in Baxterville field, Lamar County, drilled to 8,825 ft. in sidetracked hole and completed for initial production on pump of 40 bbl. per day. Perforated intervals are 8,680-84 ft., 8,688-92 ft., 8,736-42 ft., 8,770-74 ft. and 8,792-98 ft.

Humble Oil & Refining Co. C-1 Edward Grenn, 18-6n-8e, in Mallalieu field of Lincoln County, flowed 402 bbl. of oil per day through ¼-in. choke, through perforations at 10,433-47 ft.

ALTEN UNIT PUMPERS



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MISSISSIPPI WILDCAT FAILURES

Sharkey County: J. K. Wadley 1 John S. Durst, 34-14n-6w, dry, TD 4,008 ft., top chalk 3,582 ft., Selma 3,605 ft., Taylor marl 3,689 ft., lower Cretaceous 3,811 ft.

Yazoo County: H. M. McClure et al 1 Doris G. Berry, C NW SW 2-11n-1w, dry, TD 7,51 1ft., top Selma 5,140 ft., Perry 6,052 ft., Tuscaloosa 6,644 ft., lower Cretaceous 7,428 ft.

PERMIAN BASIN

Reworked Well Flows 30 Bbl. Per Hour

MIDLAND.—Fred Turner, Jr., Midland, and J. M. Hewgley, Jr., San Antonio, 1 Rose Halff Barnett, 3 miles northwest of the Benedum Ellenburger field of Upton County, which was abandoned by Humble Oil & Refining Co. as an Ellenburger failure at 12,367 ft., filled all available storage early this week flowing from 20 to 30 bbl. of 55°-gravity oil an hour from the Pennsylvanian. When the new operators took over, about 2 weeks ago, an attempt was made to acidize the Ellenburger, but a tubing break prevented completion of the job and a retainer was set at 10,021 ft., in the Pennsylvanian. Casing was then perforated at 9,982-85 ft., 10,062-065 ft., 10,097-10,100 ft. and 10,137-140 ft., and acidized with 2,000 gal. It kicked off and flowed into pits for 5 hours after the swab had been run 10 times.

The well was then connected with storage and flowed through ¾-in. choke. The eighth hour of flowing, which included the 5 hours into pits and 2 hours ungaged into tanks, produced 21.3 bbl. of oil. The flow continued steady and was not gaged during the entire time. During the twelfth and thirteenth hours, the flow gaged 19 and 20 bbl. The choke was then changed to ¼ in., and it gaged 20 bbl. the fourteenth hour and 29 bbl. the fifteenth hour. Operators reported a slight drop in gas-oil ratio, which averaged around 2,500 cu. ft. Humble turned the well over to Turner and Hewgley for an overriding interest in it and its quarter section location in NE SE, Section 4, Block Y, TCRR Survey. Location is ½ mile south of Humble's 1 J. M. Parrott, a 1945 discovery in the Pennsylvanian which had an initial flow estimated up to 50 bbl. of 43°-gravity oil an hour. The flow died shortly thereafter and the 1 Parrott was finally completed for about 5 bbl. of oil and 1 bbl. of water a day, on the pump.

Oil and gas shows in the Ellenburger were reported at Magnolia Petroleum Co. 1 Winston Brothers, Kirkland & Fields Subdivision, 3½ miles southwest of Snyder in Scurry County. The first of three drill-stem tests was from 7,841-52 ft. Gas came to the surface in 45 minutes and in 2 hours the recovery was 170 ft. of heavily oil and gas-cut drilling mud. A second test, between packer at 7,852 ft. and total depth of 7,864 ft., had gas at the surface in 14 minutes and recovered 140 ft. of slightly oil and gas-cut mud. It was drilled to 7,875 ft., and with packer at 7,863 ft. recovered 60 ft. of gas-cut mud plus 550 ft. of salty water having only a show of oil, in 1½ hours. It was deepened to 7,905 ft. and shut down for orders and to run electrical surveys. Location is about 6 miles northeast of production in the shallow Sharon Ridge field.

The Tucker field of southwest Crane County gained a good producer, plus a new location last week. Standard Oil Co. of Texas 2 Nellie M. Tucker, Section 21, Block 3, H&TC Survey, flowed 1,165 bbl. of oil a day, through ¼-in. choke, on a drill-stem test of the Waddell section of the Simpson at 5,761-95 ft. Total recovery was not reported. Oil came to the surface in 26 minutes, and gas-oil ratio was around 750 cu. ft. Earlier it tested some 6,000,000 cu. ft. of gas a day, plus 130 bbl. of oil, on a test

Security

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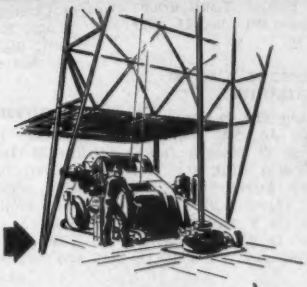

360° SHEARING ACTION GIVES EFFICIENT CLEANING WITH ROTARY OR VERTICAL MOVEMENT

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In all cases, exclusive action of the Security Casing Scraper leaves the casing smooth and clean. This provides a clear, unobstructed passage for other tools and equipment, and a perfect sealing surface for perforation washers, packers, swabs etc.

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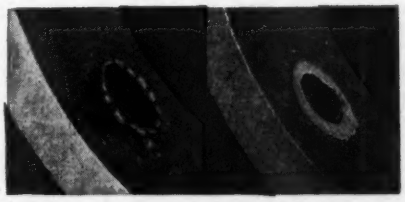
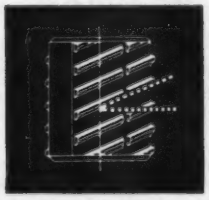
√ 1. No other casing scraper can be run with wire, line, tubing or drill pipe.
√ 2. Opposed spring loaded cutters provide 360° tooth contact with casing—cutters are reversible for extra long service life.
√ 3. Positive SHEARING action removes all foreign matter and burrs left by gun perforating quickly and cleanly without crushing or scraping action.
√ 4. Multiple cutter teeth positively clean every inch of casing.
√ 5. Few parts, simple construction and long life assure operating economy.



Gun perforations before and after removing burrs with Security Casing Scraper.



Helical teeth produce shearing action, which quickly and cleanly cuts away all foreign materials and protrusions.

Four reversible cutters are firmly expanded against casing walls by three strong coil springs in each cutter.

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SECURALOY DRILLING & PRODUCTION EQUIPMENT

at 5,740-95 ft. The new location is Standard 3 Tucker, ¼ mile northwest of the 2 Tucker.

WEST TEXAS (DISTRICTS 8 & 7-C) SUCCESSFUL WILDCAT

Andrews County: Placid Oil 1 E. G. Nix, Sec. 21, Blk. A-47, PSL Sur., 12½ mi. W Andrews, pumped 85 bbl. 40°-gravity oil a day, plus 40 bbl. water, Tubb 6,900-59 ft., 6,965-78 ft., and 6,984-7,000 ft., TD 7,455 ft., elev. 3,292 ft.

WEST TEXAS (DISTRICTS 8 & 7-C) WILDCAT FAILURES

Andrews County: Humble Oil & Refining Co. 1 Hugh Ferguson, Jr., Sec. 12, Blk. A-49, PSL Sur., 4 mi. N Nelson field, dry, TD 11,515 ft., Yates 3,010 ft., San Andres 4,520 ft., San Angelo 5,720 ft., Ellenburger 11,410 ft., elev. 3,394 ft.

Gaines County: Luce & Ice 1 Mrs. Margie Webb, Sec. 332, Blk. G, CCSD&RGNG Sur., 8 mi. W Seminole, dry, TD 5,193 ft.

Sutton County: Western Natural Gas Co. 1 Joseph VanderStucken, Sec. 32, Blk. 14, TW&NG Sur., 6 mi. from S line and 16 mi. from E line of county, dry, TD 6,005 ft., Strawn 4,285 ft., Ellenburger 5,265 ft., elev. 2,272 ft., DST recovered oil-cut mud at 4,288-4,310 ft., 4,310-28 ft., and 4,290-4,335 ft.

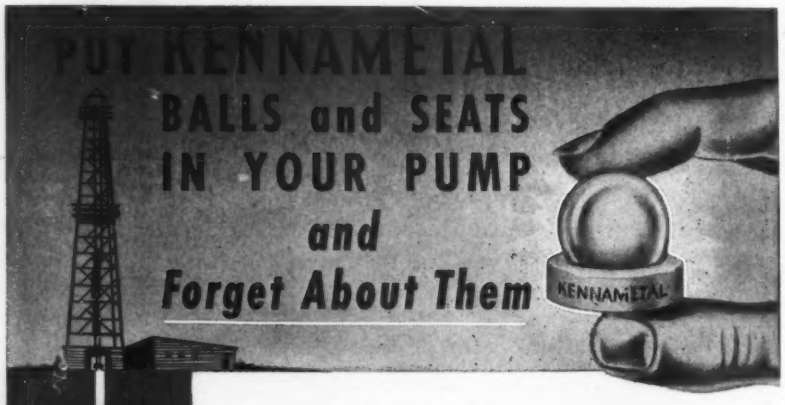
Terry County: Central Oil Co. 1 Myrtle May Scales Edwards, Sec. 21, Blk. C-36, PSL Sur., 5½ mi. Adair field, dry, TD 5,858 ft., San Andres 4,710 ft., elev. 3,280 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Richfield Oil Corp. 2 Comanche Unit, 24-11s-26e, Chaves County wildcat, continued testing on the pump, but was making mostly salt water. Last gage reported, from two sets of perforations at 6,116-42 ft. and 5,157-84 ft., showed 28 bbl. of fluid in 11 hours, being 1 bbl. of oil and 27 bbl. of salt water. Barnsdall Oil Co. 1-A State, 23-8s-32e, was still in the Pennsylvanian section in drilling at 9,780 ft.

Phillips Petroleum Co. 1 Shipp, 20-18s-37e, recovered 560 ft. of slightly gas-cut drilling mud on a 1-hour test of the San Andres at 4,581-4,682 ft., and continued drilling. It is a 10,000-ft. Ellenburger wildcat. Stanolind 1-U State, 2-20s-38e, was drilling in lime below 5,244 ft.

Texas Pacific Coal & Oil Co. 39-A State, prospective Pennsylvanian discovery in 9-22s-36e, South Eunice area, tested perforations from 10,896-10,907 ft. and 10,916-10,936 ft., showing gas at the surface in 7 minutes, which died in 45 minutes. The test had not been completed on last report. Corrected depth is 11,030 ft.



That's just what one operator did. He pumped sandy oil continuously for 448 days without valve trouble.

When he pulled the pump for routine inspection at the end of this period, examination of the KENNAMETAL* ball and seat failed to disclose any wear. In fact, he was unable to determine which side of the seat had been used.

It was amazing to him that any valve would remain in good condition for so long under such severe conditions. No other ball and seat had ever lasted more than 20 days.

Here is the reason for this remarkably long, trouble-free service.

Kennametal is very hard—80 Rockwell C as compared to 66 for hardened tool steel—and offers great resistance to abrasion.

And when brine as well as sand comes up with the oil, here, also, Kennametal prevents trouble. It resists the corrosive effect of chemical elements common to many oil fields.

Moreover, Kennametal withstands the severe impact of repeated high pressure blows, as it has unusual strength and toughness for such a hard material.

Kennametal balls and seats far outlast the normal maintenance cycle because of remarkable durability. By their use production is sustained, idle pumping time reduced, and repair expense minimized.

Old pumps can thus be rejuvenated, and new pumps made better from the start.

Kennametal balls and seats are made in A.P.I. standard types and sizes to fit any make of pump. Prices will be quoted upon request.

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APPALACHIAN FIELD

Fayette County Test Tops Tully Lime

PITTSBURGH.—In Georges Township, Fayette County, Pennsylvania, Orville Eberly et al 1 John Dulick topped the Tully lime at 6,580 ft. and is drilling around 6,600 ft. In Shade Township, Somerset County, Peoples Natural Gas Co. 3,725 R. F. Grove, elevation 2,343 ft., tentatively logged the Marcellus at 8,800 ft. or at 6,457 ft. subsea. Drilling is at 8,839 ft.

In Grant district, Jackson County, West Virginia, United Fuel Gas Co. 6337 Charley Boyce, elevation 782 ft., has been shut down at 4,911 ft.; Corniferous lime 4,710 ft., Oriskany sand 4,852-4,902 ft. with a show of oil at 4,857 ft.

In the Berea sand oil pool in Ravenswood district, Jackson County, Columbian Carbon Co. 2 John Suck was completed showing for

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Washington 25, D. C. Notice is hereby given that the lands listed herein are offered through sealed bids on the terms hereinafter specified, to qualified bidders of the highest cash amounts per acre as a bonus for the privilege of leasing the lands under sec. 17 of the Leasing Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. sec. 181), as amended. All bids must be submitted to the Director, Bureau of Land Management, Washington 25, D. C., on or before 1 p.m. of the date set out herein. Each bidder must submit with the bid one-fifth of the amount bid in cash or by certified check on a solvent bank or by money order made payable to the order of the Treasurer of the United States, and file the showing of qualifications to receive a lease required under 43 CFR 192.42 (b) and (c). The envelopes should be plainly marked that they are not to be opened before the date and hour set out herein, and should show the number of the parcel and the name of the field. No bids received after the hour fixed herein for receiving bids will be considered. The remainder of the bonus and the annual rental must be paid and an acceptable surety bond in the sum of at least double the amount of rental, but in no case less than $1,000 nor more than $5,000, must be furnished by a successful bidder Marion Clawson, Director.
prior to the issuance of a lease. An acceptable $5,000 surety bond will be required prior to commencing drilling operations on the land. The deposits of the other bidders will be returned upon acceptance of the successful bids. Bidders are warned against violation of section 59, U.S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids. Royalties payable to the United States will be at the rate of 12½ per cent to 25 per cent for oil, and 12½ per cent to 16 2/3 per cent for gas, in accordance with Schedule B in the lease form. Annual rental will be at the rate of $1.00 per acre. The land is offered in one parcel described as S½SW¼ sec. 34, T. 27 N., R. 90 W., 6th P.M., Wyoming, 80 acres, and is within the known geologic structure of the Lost Soldier field. Bids must be submitted on or before 1 p.m., Daylight Saving Time, September 29, 1948.

50 bbl., total depth 2,182 ft. Lamp & Spencer 1 C. A. Jewell gaged 184,000 cu. ft. of gas without any show of oil, total depth 2,120 ft.

In Grant district, Wayne County, Libbey-Owens brought in a good gas well, 781 Robert Williamson, for 5,313,000 cu. ft., after acidizing in the Big lime, total depth 2,021 ft.

WEST VIRGINIA SUCCESSFUL WILDCAT

In Tucker district, Wirt County, United Fuel Gas Co. 6335 I. T. Thompson tested 2,588,000 cu. ft. of gas after shot, with a rock pressure of 1,750 lb. in 36 hours, elevation 1,001 ft., Corniferous lime 5,173 ft., Oriskany sand 5,309-5,350 ft., gas at 5,309, 5,325, 5,339 ft., total depth 5,358 ft.

CANADIAN FIELDS

Fire at Wild Well Brought Under Control

CHATHAM.—Climaxing an unruly career that began when it blew wild on May 12, Atlantic 3, LSD 12, 23-50-26w4, the most spectacular well in the Leduc field, caught fire on September 6 and burned wide open with gas and oil flames leaping 200 ft. in the air. From the well head the flames extended to surface oil accumulated in craters formed when the pressure broke through below the casing, and set fire to storage tanks in the immediate area. Numerous bulldozers were put to work throwing up dikes to confine the fire to the vicinity of the well. The flames were visible from the southern outskirts of Edmonton 17 miles distant. Neither of the directional relief wells was affected. On September 9, the fire was reported extinguished, the injection of water choking off the oil and gas. At its peak the wild well is estimated to have flowed 14,000 bbl. a day and for the week ending August 30 it flowed 8,763 bbl., more than half the production of the Leduc field. The well has marketed approximately 1,200,000 bbl. of oil, in addition to undetermined quantities lost or burned.

Leduc.—Official restricted quota figures recently issued show an aggregate of 3,656 bbl. for 25 new completions, including 2 in the Woodbend extension. In the Woodbend area, another test for lower Cretaceous production, Phillips Petroleum 1, LSD 8, 12-51-26w4, offsetting the Continental-Woodbend 3 producer, has spudded.

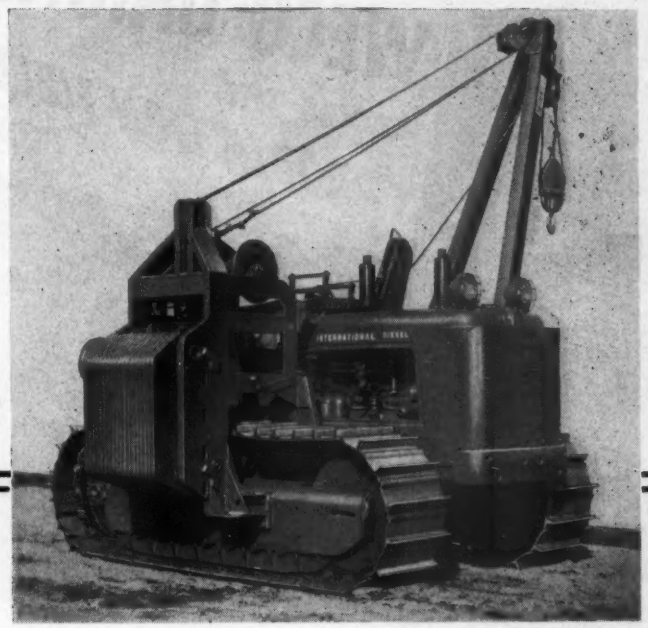
Redwater.—That encouraging showings have been encountered in Imperial-Redwater 1 wildcat test, LSD 1, 32-57-21w4, 32 miles northeast of Edmonton, is confirmed by Imperial Oil officials, who, however, deny rumors that the well actually flowed. The well was drilled to 3,131 ft. and tests were made in the lower sections from 3,110 ft. to total depth. Unofficial reports indicate the oil showing was encountered in the D-2 horizon, and approximated 34° gravity. The depth is about 2,000 ft. less than in the Leduc field, due to the fact that the basic Cambrian shield rises to the north.

Pincher Creek.—At the Canadian Gulf-Pincher Creek 1 deep test, LSD 15, 24-3-29w4, bottoming at 12,516 ft., most of the lost tubing has been recovered and 3⅞-in. retainer is being run preparatory to continuing production tests of the Madison limestone. The well has already been proven as a definite wet gas and distillate producer, but extensive sections of the limestone are still to be perforated and tested.

Steveville.—In the Steveville-Princess field, southern Alberta, Consumers-Princess 1, LSD 2, 8-19-11w4, in drill-stem test at 3,322 ft., gave a 2,022-ft. oil rise in 1 hour, the best initial showing yet encountered in the field. Casing has been set for definite production test.

Lloydminster.—Blackfoot-Devonian 1, a deep test of the lower horizons of the

Superior PERFORMANCE



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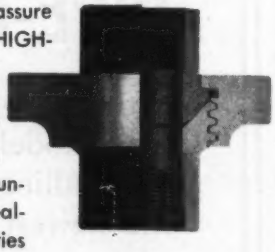

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Lloydminster field, will be drilled by a syndicate comprising Lignora Gold, Royal Canadian Oils, Petromine Exploration, Pacalta Oils, Granleduc Oils, Superior Oils, Llyodminster Oil Producers and Hargal Oils, with assistance from Imperial and Hudson's Bay Oil & Gas Co. Location has been made in LSD 12, 15-50-2w4, in the Blackfoot section of the field, and drilling will be carried to around 3,800 ft., sufficient depth to test the potential producing horizons of the Devonian.

SOUTHWEST TEXAS

Aransas County Gets New Field

CORPUS CHRISTI.—A new oil field has been opened in Copano Bay, approximately 3 miles north of the Fulton Beach field, in Aransas County, by Phillips Petroleum Co. 1 State-Copano Bay, Section 34, 9 miles north-northeast of Rockport townsite. Now waiting on potential gage of the oil production after completing through perforations in the Frio zone at 7,143-48 ft., the well flowed 160 bbl. of 41.5°-gravity oil in 23 hours through a ⅛-in. choke on initial flow test, with 1,250 psi. tubing pressure, casing sealed. Gas-oil ratio was 640. Total depth is 9,512 ft. with 5½-in. casing set to 7,210 ft.

W. A. Richardson et al A-1 Jno. Duerksen Tr. No. 1 wildcat 3½ miles northwest of Premont in Jim Wells County, flowed 16 bbl. of 47°-gravity oil per day through a ¼-in. choke through perforations at 5,455-57 ft. Gas-oil ratio was 7,500. Bottom-hole flowing pressure was 675 psi., and shut-in pressure 1,800 psi. Total depth is 6,010 ft.

A new oil field has been opened 2 miles off the south flank of the Lacy field structure in Hidalgo County. Thomas O. Payne et al 1 D. J. Schwarz flowed 153 bbl. of 45.3°-gravity oil per day through an 11/64-in. choke with 400 psi. flowing pressure on the tubing and 1,900 psi. casing pressure. Gas-oil ratio was 1,045. The well produces through 13 holes at 7,562-66 ft. Sands with good odor were encountered at 7,239-74 ft. and 7,570-80 ft. This new production is located 4 miles northwest of Feria.

Humble Oil & Refining Co. B-6 John G. Kenedy, Jr., wildcat test in the Sarita area of Kenedy County, recovered 425 ft. of oil and sand on drill-stem test from 3,679-88 ft. Operators are drilling ahead below 4,000 ft. This test is located in Block 12, Kenedy Pasture Co. 1st addition to Sarita Township, in the El Paistle Grant.

There were 51 new locations reported for Districts 1 and 4, with 16 being wildcat starts, being 3 in San Patricio, 2 in Zapata, and 1 each in Atascosa, Bastrop, Brooks, Caldwell, Guadalupe, Jim Hogg, Nueces, Starr, Webb and Willacy counties. Two successful exploratory tests were completed, 1 each in Duval and Hidalgo counties. Six wildcats were dry, 2 each in Duval and Starr and 1 each in Bexar and Webb counties.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCATS

Duval County: Oil discovery—Magnolia Pet. Co. 1 Duval Ranch, Sec. 79, in CCS&-RGNG Sur. 79, 6 mi. W of Freer and 2¼ mi. N-NW of Lundell field, TD 2,539 ft., perf. 1,478-81 ft., Cole sand, IP: 69 bbl. oil per day on pump, gravity 20°, no water.

Hidalgo County: Oil discovery—Thomas O. Payne et al 1 D. J. Schwarz, Lot 3, Blk. 25, Capisallo dist. of the American Rio Grande Ld. & Irrg. Co., Llano Grandt Gr., 4 mi. NW of La Feria, and 2 mi. S of the Lacy field, TD 7,615 ft., perf. 7,562-66 ft., IP: 153 bbl. oil per day through an 11/64-in. choke, GOR 1,045, TP 400 psi., CP 1,900 psi., gravity 45.3°, 0.9 per cent water.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Bexar County: O. W. Killam 2 William H. Russell Est., Fernando Rodriquez Sur., 12 mi. S of San Antonio, dry, TD 1,569 ft.

Duval County: Rodney DeLange & John A. Huff 1 D. C. Chapa et al, Sur. 489, 14 mi. NW of Benavides and 2 mi. SE of Hoffman field, dry, TD 3,420 ft.

Hiawatha O. & G. Co. 2 Atlee Parr, in San Andres Gr., 6 mi. S of Benavides and SE of Benavides field, dry, TD 6,011 ft.

Starr County: C. B & S. Exploration Co. 1 Starr Co. Cattle Co., Lot 57, Share 60, Porcion 89, 1½ mi. NE of South Ross field, dry, TD 2,820 ft.

Sun Oil Co. 2 Esteban Garcia, Porcion 38, dry, TD 5,805 ft.

Webb County: Bridwell Oil Co. 1 Zaragosa Laurel, BS&F Sur. 715, 4 mi. SE of Oilton, dry, TD 3,425 ft.

OHIO, KENTUCKY

Canton Field Area Gets Wildcat Play

COLUMBUS.—As the Canton field draws nearer to being completely drilled up, an extensive wildcat testing of surrounding areas is taking place. In Stark County, the East Ohio Gas Co. is drilling the 1 A. R. Harris, Section 19, Lake Township; Belden Co. has a rig up on 1 Snode in Section 20, Lexington Township; W. Pfeiffer is drilling the 1 John Snyder in Section 18, Nimeshillen Township. In Washington Township, Frank Lyons is fishing near the sand at the 1 W. H. Mason, Section 18, while the Park Oil & Gas Co. 1 Leslie Weaver, Section 22, and the Stark Oil & Gas Co. 1 George Wallace, Section 25, are drilling. The Belden Co. has a rig up on S. Pomesky, Section 34, Osnaburg Township, and is drilling the 2 Ben Willen in Section 23, Bethlehem Township.

Roy Weed et al 1 W. S. Schrock, Lot 19, Aurora Township, Portage County, has been making an average of 35 bbl. per day after shot, and the southeast trend will be further tested. The production is from the red Clinton at 3,995-4,051 ft.

The Wasson Co. has put its 1 Murray Coble, Section 28, Hopewell Township, Perry County, on production after an extended fishing and casing job. The well is now flowing 40 bbl. per day, and five offsets have been staked.

EASTERN KENTUCKY

ASHLAND.—In southern Morgan County and on the Caney anticline, Sam Allen et al 1 Thomas Richardson, 12-P-65, is drilling at 2,075 ft. This test is slated to explore the Knox dolomite and will be the first of its kind in the general area. The well is located approximately 2 miles south of the Irvine-Paint Creek fault.

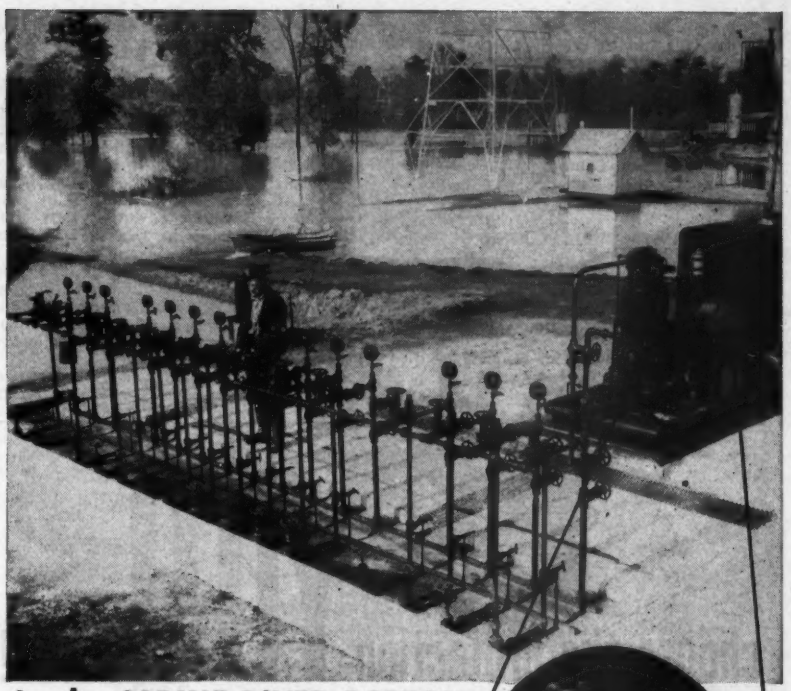
In Clay County and located on the Rockcastle River uplift, Pure Oil Co. 1 Rawlings Consolidated is drilling below 1,900 ft. with test designed to penetrate upper series of the Knox dolomite.

In Fleming County and located in 14-V-71, Lilly et al 2 John Riley had water at 1,507 ft. and was drilling ahead. Test is in or near the St. Peter-Knox horizon. Operators may run casing to shut off water before drilling deeper.

A test of the deeper formations of Knott County is now in progress at David Hall 1 H. H. Smith located on Mallet Creek in the southern portion of the county. Drillers found the Clinton sand dry at 4,300 ft. so operators are drilling below 5,000 ft. in order to test deeper pays.

EASTERN KENTUCKY WILDCAT FAILURE

Magoffin County: Ballard Lyons 1 Prater May, Licking River, showed 50,000 cu.



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WESTERN KENTUCKY

OWENSBORO.—In the Guffie pool, Miller & Shiarella and Ashland Oil & Refining Co. have completed 2 L. G. Leachman Heirs, 18-N-28, McLean County, with an initial production of 40 bbl. per day from the Bethel sand at 1,863-76 ft. Total depth is 1,880 ft.

Great Lakes Carbon Co. has completed 1 Street, 21-P-32, Pellville pool in Daviess County, with an initial production of 100 bbl. per day from the McClosky at 996-99 ft.

In the Geneva pool, Clarence Wood 13 C. Wood fee, 16-Q-22, Henderson County, is adding McClosky production from pay at 2,598-2,620 ft. Production is estimated at 200 bbl. per day. The pool also has production above the McClosky from the Waltersburg, Tar Springs, and Weiler formations.

INDIANA

EVANSVILLE.—The recently opened Wilfred pool in Sullivan County continues in the news as F. B. Cline tests the Devonian at the third well in the pool. The new well, Cline 1 Leon Wallace, SW NW NE 30-9n-8w, had gas on a drill-stem test at 1,984-2,004 ft. and a show of oil at 2,021-30 ft. Casing has been set at 2,036 ft. with total depth at 2,039 ft. The second well, Cline 1 Pittman, SW SW NE of the same section, continues on test and is flowing 22 bbl. per hour through very small choke. Neither well has been acidized. Cline 2 Harry Siepman, NE NW SE of the same section, is drilling below 1,090 ft.

In Gibson County, Illinois Mid-Continent Co. 1 McFarland-Andrews, NW SW NW 19-1s-11w, has been completed in the O'Hara at 2,346-59 ft. with an initial production of 100 bbl. per day following 2,000-gal. acid treatment. Total depth is 2,438 ft.

Good wells are being completed in the Rochester pool area of Gibson County. Fred Heidt 2 E. J. Lennert, SE SE SW 12-2s-13w, has been completed with an initial production of 700 bbl. per day from the Waltersburg at 1,896-1,945 ft. In the same section, R. C. Halbert 2 E. J. Lennert has been completed with an initial production of 600 lb. per day—also from the Waltersburg.

INDIANA SUCCESSFUL WILDCAT

Gibson County: Gilliam Drilling Co. and Carter Oil Co. 1 H. M. Montgomery, SE NE SE 18-3s-11w, IP 11 bbl., Rosiclare, 2,470-86 ft., TD 2,692 ft. (extension to Owensville pool).

INDIANA WILDCAT FAILURES

Gibson County: Olds Oil Co. 1 Ayers, SE SE SE 5-2s-9w, dry, TD 1,832 ft.

Superior Oil Co. 1 Wheelhouse, SE SW SW 4-3s-11w, dry, TD 2,492 ft.

Miami County: Princeton Mining Co. 1 W. Altman, SW SE NW 20-27n-5e, dry, TD 973 ft.

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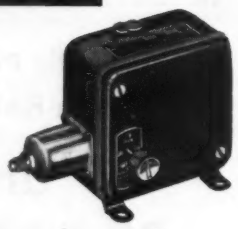

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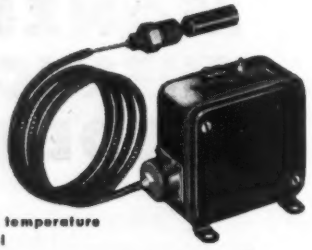

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EASTERN TEXAS

Cherokee County Test To Drill Ahead

DALLAS.—Standard Oil Co. of Texas 1 T. E. Acker, Travis Peak wildcat in the T. R. Walker Survey, 2¼ miles northwest of Maydelle, Cherokee County, prepared to drill ahead after reaming to 4,947 ft., apparently still in the Woodbine sand. Cores from 4,904-09 ft. recovered 1 ft. of medium to coarse-grained sand, very porous and having a kerosine odor on fresh break. Cores from 4,909-14 ft. recovered 1 ft. 1 in., being 3 in. of shale cavings and 10 in. of medium grained porous sand with salty taste.

Union Producing Co. 1 J. M. Travis, 3 miles southeast of Mount Selman, Cherokee County, was drilling lime and shale below 7,501 ft.

In Hopkins County, Delta Drilling Co. et al 1 Wilson, 2 miles south of Sulphur Bluff, had total depth at 9,408 ft. and were to run electrical log and drill-stem test. The well had a drilling break at 9,386 ft. Cores from 9,392-9,408 ft. recovered 8 ft. of granular lime, fair porosity and having strong sulfur odor and taste.

In Smith County, Delta Drilling Co. 1 Rice, Anderson Survey, 4 miles southwest of Tyler, prepared to make production tests after recovering 90 ft. of 27°-gravity oil on a 50-minute drill-stem test of the Paluxy at 7,580-7,607 ft. Total depth is 7,891 ft., with casing set to 7,879 ft.

Humble Oil & Refining Co. 1 Sackett, Tejeda Survey, about 4 miles northwest of Bullard, plugged back to 10,460 ft. from total depth of 10,600 ft., some 50 ft. into the Travis Peak, and was to start testing back up the hole. There were no shows in the Travis Peak.

Magnolia Petroleum Co. 1 Effie Lawson, on the northeast flank of the Opelika field, Henderson County, found the Rodessa section barren and prepared to deepen to the Travis Peak. Seven-inch casing is set to total depth of 9,073 ft.

EAST TEXAS (DISTRICTS 5 & 6) WILDCAT FAILURES

Limestone County: Temple Hargrove 1 W. D. Moody, R. W. Toller Sur., NE corner of county, dry, TD 2,260 ft., no shows.

Wood County: Danciger Oil & Refining Co. 1 Mary Starr Niendorff, Andres Gonzales Sur., 5 mi. S Yantis, dry, TD 4,815 ft., Austin 3,988-4,112 ft., Woodbine 4,567 ft., elev. 429 ft.

ROCKY MOUNTAIN

Bay Reworks Wildcat To Open Cemented Sand

DENVER.—Interest in the east side of the Powder River basin is being revived with reports that Bay Petroleum Corp. is now reworking its 1 Christensen-Davis, C NW SE 9-44n-66w, in the Lodgepole area, Weston County, Wyoming. The company ran gamma-ray log and found that casing had been cemented through the top of the saturated Dakota sand, and the operator is now plugging back from approximately 6,736 ft., total depth, to the base of the casing at 6,730 ft. and will perforate casing for further tests on the well. Wire-line measurement found the well to be 5 ft. lower than previously reported. On drill-stem test of this well prior to running casing the operator recovered 3,230 ft. of 42°-gravity light green oil and no water. However, after running casing, the well swabbed first at the rate of 15 bbl. of oil per hour, and then, on continued swabbing tests, started making water. Prior to suspending operations the well swabbed at the rate of 60 bbl. of oil and 110 bbl. of water per day. A second well drilled by Bay 3 miles southeast of the first found the Newcastle, Dakota, Lakota and Sundance sands dry. Meanwhile northeast of the Lodgepole area, Sierra Petroleum Co. of Denver reports its wildcat at 1 Kuemmerle, C NE SE 14-45n-65w, is making oil on pump tests. Initial tests after perforating 1 ft. of Dakota sand between 5,380-1 ft. showed the well making approximately 13 bbl. of oil per hour. It is reported water is increasing in the well. In the Fiddler Creek area, northeast of Lodgepole, Clark Drilling Co. is now reported to have shows of oil in the Newcastle and on drill-stem test at 4,200-20 ft. the well is reported to have made 1,600 ft. of oil. The well is the 1 Wexal, NW NE SW 19-46n-64w, and casing is now being run for further testing. This is the fifth well to be drilled in the Fiddler Creek area, with the other wells having shows of oil in the Newcastle but no commercial production. Several wildcats are now planned for the area southeast of the Lodgepool well, between the Mush Creek and Ant Hills fields. British-American and Superior have abandoned their well in the Alkali Creek area at 1 Manke, NW SW NW 35-40n-62w, Niobrara County, after failing to find Newcastle sand, and having no shows in the Frontier, Dakota or Lakota. Three additional locations have been made on the block.

Atlantic Refining Co. is coring below 8,300 ft. at its 1 Tribal, C SW SE 25-1s-4e (WRM), in the Riverton area, Fremont County, Wyoming, after running a 5-day production test on the Frontier gas sand. At the end of the test the well flowed at the rate of 1,000,000 cu. ft. of gas daily and the well was estimated good for 2,000,000 cu. ft. of gas from the zone. Oil and gas-cut mud was also recovered on the test, with a small amount of free oil. Top of the Frontier was approximately 7,950 ft. and the operator is drilling ahead for a test of the Dakota and Morrison sands, productive in the Beaver Creek field, immediately south of the Riverton block. Another wildcat of interest in this area will be drilled by the Trigood Oil Co. and R. S. Shannon and others of Denver. The well will go to the Tensleep and will be located on the Northwest Sand Draw block centering Section 34-33n-95w. This block is immediately north of the Sand Draw field, which produces oil from the Tensleep, and is east of the Beaver Creek field. Tensleep is estimate at around 10,000 ft. in this area.

Initial tests of The Texas Co. 2 Unit, Maudlin Gulch, Moffat County, Colorado, Sundance sand discovery indicate the well will be good for more than 150 bbl. of oil daily. On 24-hour swabbing test the well made 139 bbl., with fluid level at 1,500 ft.

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The 2 Unit is located in SE NE SE 27-4n-95w, and the discovery is considered the first of importance in the state in recent years. Frontier Refining Co. of Denver is joint operator with Texas in the block. The first well, recompleted a year ago, made a small producer in the Morrison sand. The current well was drilled to 6,409 ft., total depth, with top of the Sundance at 6,392 ft. Casing was cemented on bottom and perforated between 6,391-98 ft.

New locations.—There were 35 new locations made during the week with 22 in Wyoming, 7 in Montana, 4 in Colorado, and 2 in northern New Mexico. In Wyoming Argo Oil Corp. made location for a Madison test in the Hamilton Dome field, and the well will be the first to test that formation thoroughly. The field produces from the Embar and Tensleep horizons. Seaboard and Husky have made location at 1 Government, NW NE SW 2-44n-96w, for a Tensleep test of the Little Sand Draw structure between Gebo field and Golden Eagle Dome. Tide Water Associated is rigging up rotary for a Madison wildcat at 74-21 Unit, NE NW NE 21-41n-81w, on the Tisdale anticline northwest of the Salt Creek field.

WYOMING WILDCAT FAILURE

Niobrara County, Alkali Creek: British-American & Superior 1 Manke, NW SW NW 35-40n-62w, 5,058 ft., TD, dry, Frontier 3,795 ft., Greenhorn 3,905 ft., Graneros 4,005 ft., no Newcastle, Dakota 4,816 ft., Fuson 4,949 ft., Lakota 4,984 ft., elev. 3,782 ft.

NORTHERN NEW MEXICO WILDCAT FAILURE

Rio Arriba County, Cuba: Jenkins & McQueen 1 Gartner, NE NW NE 21-18n-3w, 3,435 ft., TD, dry, Dakota 3,270 ft.

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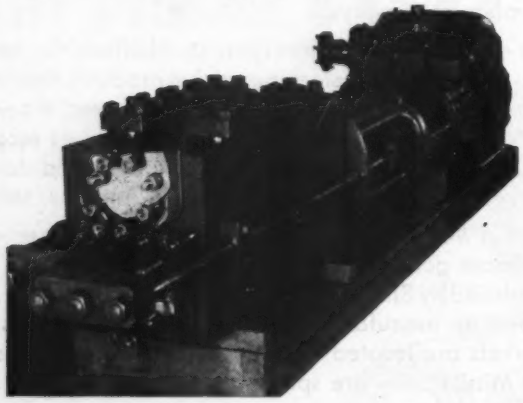

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CALIFORNIA

Barnsdall Has Good Show In Fresno County Wildcat

LOS ANGELES.—Another oil field of important significance appears to have been discovered in California according to the reports reaching the industry at the close of the week. These reports indicate that Barnsdall Oil Co. has obtained a highly favorable reaction to a formation test at the 1 Fred Smith, 34-20s-16e, a wildcat located in the Guijarral Hills area of southwestern Fresno County. Although the tester was open only 18 minutes, it brought 5,200 ft. of 33.7°-gravity crude to the surface when pulled from the hole. A Barnsdall spokesman said that judging from the well's reaction it may prove to be worth anything up to about 5,000 bbl. a day. He also indicated that crews are now conditioning the hole preparatory to setting casing and completing the well.

The formation test at the 1 Smith was made at the interval of 8,700-30 ft. in the Leda zone. The Leda is in the Oligocene or Oceanic formation and lies below the Vaqueros. The prospective discovery well is located on a down-dip from the Pleasant Valley field toward Kettleman Hills. Since the Leda zone is not found at either Pleasant Valley or on the Coalinga Nose it is believed to be a pinch-out sand.

Barnsdall holds about 1,300 acres of leases in the area and is surrounded by several other operators, chiefly Standard of California and Robert Lytle. These latter two operators have drilled some four or five wildcats in the area during the past 15 years but nothing of interest has been uncovered previously.

Although the San Ardo area of Monterey County has yet to give up a noteworthy producer, it continues to provide news of interest. The latest venture here to attract attention is the 1 Ansberry, 2-22s-9e, a test being drilled jointly by the Cleveland Oil Co. and Barnsdall Oil Co. This well was expected to pick up showings at approximately 1,200-1,500 ft. but late reports indicate that it picked up 42 ft. of interesting formation at 800 ft. Since that time, however, the companies have carried the well on down to 1,150 ft., but it is expected that they will back up for a test at the 800-ft. level after total depth is reached. The 1 Ansberry lies about 7 miles northwest of production recently developed by the Jergins Oil Co. and North American Consolidated Oil Co.

CALIFORNIA SUCCESSFUL WILDCATS

Kern County, Arvin area: British-American Oil Producing Co. & Capital Co. 57A-26 Hansen, 26-31s-29e, flowed 196 bbl. in 12 hours through ¼-in. choke, gravity 35.4°, water cut 0.2 per cent, elev. 421 ft., TD 7,325 ft.

Race Track Hill area: Standard of California 10-2 Cohn, 28-29s-29e, pumped 35 bbl. in 17 hours, elev. 740 ft., TD 1,300 ft.

Wheeler Ridge area: Richfield Oil Corp. 33-29 KCL-Cole Canyon, 29-11n-20w, pumped 114 bbl. per day, gravity 17.9°, water cut 35 per cent, elev. 1,360 ft., TD 1,309 ft.

Los Angeles County, Placerita Canyon area: Indian Oil Co. 2 Kraft, 31-4n-15w, pumped 28 bbl. in 8 hours, elev. 1,475 ft., TD 840 ft.

Standard of California 2 Placerita, 6-3n-15w, pumped 22 bbl. in 12 hours, gravity 15.5°, water cut 19 per cent, elev. 1,407 ft., TD 1,061 ft.

Solano County, Denverton area: Honolulu Oil Corp. 1 Peterson, 25-5n-1w, IP 1,110,000 cu. ft. of gas per day through ⅜-in. choke, elev. 29 ft., TD 1,801 ft.

CALIFORNIA WILDCAT FAILURES

Kern County, McDonald Anticline area: Independent Exploration Co. O-1 Anderson, 19-28s-20e, dry, elev. 1,024 ft., TD 2,500 ft.

McKittrick area: Union Oil Co. 1 R. & K., 34-30s-21e, dry, elev. 2,395 ft., Brown shale 780 ft., Gould shale 3,480 ft., Santos 6,083 ft., Phacoides 7,103 ft., Point of Rocks 7,410 ft., TD 7,659 ft.

San Emigdio area: H. H. Magee 1 Hudson, 21-10n-23w, dry, TD 2,675 ft.

Shale Hills area: Signal Oil & Gas Co. 1 Signal et al, 22-27s-18e, dry, Gould shale 530 ft., Eocene 1,560 ft., TD 2,194 ft.

Monterey County, San Ardo area: Bishop Oil Co. et al 1 O'Reilly, 32-22s-11e, dry in gray sand and shale, elev. 769 ft., TD 2,483 ft.

San Luis Obispo County, Arroyo Grande area: Macoil Corp. 1 Guidetti, 27-31s-12e, dry, elev. 710 ft., TD 1,817 ft.

Ventura County, Simi area: H. H. Marr 1 Marr Ranch, 30-3n-17w, dry, elev. 1,247 ft., TD 5,307 ft.

ILLINOIS

Clinton County Wildcat Has Devonian Show

MATTOON.—Clinton County has a prospective pool opener at T. B. Derickson 1 Klienstuber, NW NE NE 34-3n-1w, about 6 miles northwest of Sandoval, where operator is preparing to test the Devonian. A 1-hour drill-stem test of this formation, made at 2,858-62 ft., recovered 360 ft. of oil, 200 ft. of oil-cut mud, 240 ft. of oil and water, and 1,200 ft. of salt water. Casing will be set for further tests. Total depth is 2,864 ft. The new well is between Boulder and Sandoval pools, both producing from the Devonian.

Bit is below 300 ft. at Burr Lambert 1 Harvey Hagler, SE NW SW 28-10s-2w, about ½ mile south of Pomona in Jackson County. This wildcat is scheduled as a deep test, 4,000-4,300 ft., which would put it in the Ordovician.

Phillips Petroleum Co. and N. V. Duncan are adding another well in the area southwest of the North Maud pool in Wabash County. The well, 1 Tennis, SW NE NE 24-1s-14w, recovered 390 ft. of oil, 390 ft. of mud-cut oil, and no water on a drill-stem test of the Cypress at 2,500-2,519 ft. The hole has been carried to 2,851 ft. and casing has been set for a test of the O'Hara at that depth since a well to the southwest was recently completed in that formation.

Johnston Drilling Co. 1 G. E. Mathis, SE NE NW 17-9s-10e, Gallatin County, is cleaning out after 500-gal. acid treatment of the McClosky at 3,047-53 ft. Local estimates are that the well will make about 100 bbl. per day.

In Richland County, R. P. Johnson 1 J. Von Almen, SE NE NW 31-5n-14w, has the makings of a good McClosky well. The well found the pay at 2,997-3,007 ft. After drilling plug and swabbing once, the well kicked off and made 756 bbl. of oil in 11 hours. The flow in the following 24 hours was 1,600 bbl. Production is through 1-in. choke and oil is 32.3° gravity.

ILLINOIS WILDCAT FAILURES

Bond County: Sun Oil Co. 1 G. L. Bauer, SE NW SE 20-5n-2w, dry, TD 3,560 ft.

Clay County: W. E. Brubeck 1 Weber, NW NW SE 25-5n-8e, dry, TD 3,140 ft.

Don Baines 1 I. Anderson, NW NW NE 16-3n-5e, dry, TD 2,918 ft.

Clinton County: S. M. Levine 2 Krost, NW SW NW 4-1n-3w, dry, TD 735 ft.

Coles County: F. D. Walker et al 1 Temples, NW NW NE 31-14n-11e, dry, TD 2,355 ft.

Gallatin County: National Associated Petroleum Co. 1 M. Davis, SE SE NW 32-7s-10e, dry, TD 2,947 ft.

Hancock County: W. D. Cody 1 A. W. Roberts, SE NW SW 12-4n-5w, 4th P.M., dry, TD 675 ft.

Jefferson County: W. H. Krohn 1 Patterson Estate, SE SW SE 27-1s-2e, dry, TD 2,430 ft.

C. E. Brehm 1 Berthold, NW NW NE 23-3s-3e, dry, TD 2,953 ft.

Montgomery County: Refiners Petroleum Co. 1 Smith, SW SE SW 32-9n-2w, dry, TD 2,419 ft.

Perry County: Producers Pipe Line Co. et al 1 Bird, SW SE NW 18-5s-2w, dry, TD 1,575 ft.

Richland County: Thomas Rappe 1 I. Lakin, NE SW NW 34-5n-9e, dry, TD 3,137 ft.

Wabash County: F. J. Fleming et al 1 R. Clodfelter, NE NE SE 9-1n-14w, dry, TD 3,095 ft.

Washington County: A. J. Slagter 1 Hunleth, NE NW NW 31-3s-4w, dry, TD 2,367 ft.

A. Schermann 1 Piotrowski, NW SE SE 1-3s-2w, dry, TD 1,430 ft.

MICHIGAN

Thirteen Field Wells Get Oil or Gas

SAGINAW.—A 200-bbl. well in Allegan and a 200-bbl. Pentwater field producer were the best of nine oil wells completed the past week in Michigan fields. Total daily initial potential of the nine wells was 755 bbl.

Four gas wells included the first in Crawford County's Beaver Creek field when Superior Oil Co. drilled the 1 State-Beaver Creek to 4,330 ft. where a gas flow gaged 3,500,000 cu. ft., but the hole was plugged back to 4,270 ft. for development of a small oil show indicating a yield on pump of a few barrels per day.

There were 18 new locations: 6 in Allegan County; 3 each in Van Buren and Oceana counties; 2 in Clare County; 1 each in Bay, Crawford, Ionia, and Mason counties.

MICHIGAN WILDCAT FAILURES

Gladwin County: McClanahan 1 State-Sheridan, NE NE NW 3-19n-2e, dry in Dundee, TD 3,437 ft.

Ionia County: Superior Oil Co. 1 Clifford Smith, SE SE SW 11-6n-6w, dry in Detroit River, TD 2,807 ft.

Mercer Oil Co. 1 Brayton, SW SW NE 23-8n-5w, dry, in Dundee, TD 2,974 ft.

Montcalm County: J. O. Mutch 1 John Dakin, Jr., SW SW SW 10-9n-6w, dry in Dundee, TD 3,170 ft.

St. Joseph County: S. L. Godfrey 1 Biddleman, SW NE SW 9-6s-12w, dry in Traverse lime, TD 1,061 ft.

St. Clair County: J. H. Van Sice 1 T. K. McDonald, NE SE NE 20-7n-16e, dry, TD 1,085 ft.

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Marietta, Ohio

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STATISTICS and T

WEEKLY WELL COMPLETIONS . . . WEEK ENDED SEPTEMBER 11, 1948

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1948				
	Comp.	Oil	Gas	Dry	Footage	1948	1947	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	29	15	0	*14	33,068	1,074	1,133	0	0	0	0	0	0	0	0	0	0
Pennsylvania	44	19	3	†22	69,605	1,827	2,051	0	0	0	0	0	0	0	9	13	22
West Virginia	22	5	15	2	55,044	563	588	0	0	1	0	1	3	0	34	36	73
Ohio	26	7	6	‡13	66,878	949	915	0	0	0	0	0	2	0	9	23	34
Indiana	24	18	0	6	48,020	725	450	1	0	0	3	4	20	0	1	38	59
Kentucky	25	12	3	10	51,346	495	483	0	0	0	1	1	7	0	0	20	27
Illinois	54	20	0	34	141,670	1,652	1,411	0	0	0	15	15	34	0	1	261	296
Michigan	21	9	4	8	46,159	573	599	0	0	0	6	6	13	0	8	177	298
Kansas	60	25	6	29	187,819	2,123	1,800	2	0	0	8	10	41	0	5	294	340
Neb., Mo., Iowa	0	0	0	0	0	5	4	0	0	0	0	0	0	0	0	4	4
Oklahoma	81	49	2	30	311,239	2,841	2,894	1	0	0	17	18	91	7	22	446	566
Texas	232	161	5	66	1,057,917	8,143	6,341	8	0	0	31	39	241	23	72	1,418	1,754
North Central (Dist. 7-B & 9)	71	37	1	‡33	200,260	2,553	2,057	3	0	0	12	15	87	0	10	509	606
West (Dist. 7-C & 8)	72	54	0	8	390,237	2,218	1,525	1	0	0	4	5	53	0	3	160	216
Panhandle (Dist. 10)	10	10	0	0	31,702	434	306	0	0	0	0	0	0	0	3	7	10
Eastern (Dist. 5 & 6)	12	4	4	4	68,554	382	361	0	0	0	2	2	9	2	0	81	92
Gulf Coast (Dist. 2 & 3)	30	21	0	9	195,829	1,285	1,101	2	0	0	6	8	56	18	21	306	401
Southwest (Dist. 1 & 4)	37	25	0	12	171,335	1,271	991	2	0	0	7	9	36	3	35	355	429
Louisiana	42	29	2	11	187,764	1,589	1,025	3	0	1	5	9	37	20	4	148	209
Northern	28	21	1	6	67,472	1,059	580	0	0	0	3	3	3	2	0	74	79
Southern	14	8	1	5	120,292	530	445	3	0	1	2	6	34	18	4	74	130
Arkansas	9	5	0	4	33,006	205	202	0	0	0	1	1	5	0	0	63	68
Mississippi	9	4	2	3	65,954	287	336	0	0	0	2	2	3	1	3	67	74
Southeastern States	0	0	0	0	0	38	41	0	0	0	0	0	0	0	0	35	35
Montana	3	1	0	2	8,439	194	189	0	0	0	0	0	3	0	0	15	18
Wyoming	13	12	0	1	67,862	369	163	0	0	0	1	1	19	0	1	41	61
Colorado-Utah	0	0	0	0	0	163	139	0	0	0	0	0	0	0	5	31	36
New Mexico	12	9	1	2	43,734	428	366	0	0	0	1	1	4	1	1	37	43
California	60	51	1	8	184,052	2,022	1,349	5	0	1	7	13	92	1	5	211	309
Total United States	766	451	50	265	2,659,576	26,265	22,479	20	0	3	98	121	615	53	180	3,378	4,226
Total previous week	815	454	58	303	2,915,785	25,499	21,788	22	0	1	100	123	595	53	177	3,280	4,105
Total September 13, 1947	691	386	56	249	2,246,945			17	1	5	79	102	483	67	145	2,776	3,471

Service wells include: *14, †20, ‡1.

CRUDE PRICES AND REFINERY ACTIVITY

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$2.17	....	....	....
19-19.9	2.19	....	....	....
20-20.9	2.21	$2.25	....	$2.12
21-21.9	2.23	2.27	....	2.14
22-22.9	2.27	2.29	....	2.16
23-23.9	2.30	2.31	....	2.18
24-24.9	2.34	2.33	$2.56	2.20
25-25.9	2.38	2.35	2.58	2.22
26-26.9	2.41	2.37	2.60	2.24
27-27.9	2.45	2.39	2.62	2.26
28-28.9	2.49	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.56	2.45	2.68	2.32
31-31.9	2.59	2.47	2.70	2.34
32-32.9	2.62	2.49	2.72	2.36
33-33.9	....	2.51	2.74	2.38
34-34.9	....	2.53	2.76	2.40
35-35.9	....	2.55	2.78	2.42
36-36.9	....	2.57	2.80	2.44
37-37.9	....	2.59	2.82	2.46
38-38.9	....	2.61	2.84	2.48
39-39.9	....	2.63	2.86	2.50
40 and above	....	2.65	2.88	2.52

***For crude from Daboval, El Campo, and Sand Point. †Includes Lea County, New Mexico. Last general price change represented a 50-cent increase becoming effective December 6, 1947. (For detailed price changes in all fields see The Oil and Gas Journal, January 1, 1948, page 107.)**

A.P.I. REFINERY REPORT, WEEK ENDED SEPTEMBER 4

(Thousands of barrels)

District—	Crude runs, daily avg.	Production: Gasoline†	Kerosine	Gas & dist. oil	Residual	Stocks at refineries, bulk terminals, in transit and in pipe lines: Gasoline*	Kerosine	Gas & dist. oil	Residual
East Coast	833	2,226	223	1,343	1,566	22,851	10,606	20,989	12,146
Appalachian:									
District 1	101	305	31	87	88	2,200	433	774	403
District 2	27	108	10	29	67	922	93	262	173
Ind., Ill., Ky.	920	3,421	393	909	1,130	19,167	4,436	10,778	6,044
Okla., Kans., Mo.	459	1,640	135	666	498	8,210	1,386	5,777	2,259
Inland Texas	244	1,010	49	188	400	3,328	737	1,107	1,022
Texas Gulf Coast	1,389	4,227	671	2,043	1,763	14,599	2,735	9,727	8,294
La. Gulf Coast	410	1,187	258	753	500	5,340	1,535	3,580	2,627
N. La. and Ark.	89	225	56	91	160	2,012	623	634	273
Rocky Mountain:									
New Mexico	12	43	7	12	28	78	25	50	33
Other Rocky Mtn.	160	511	32	181	242	1,867	294	1,341	1,014
California	862	2,742	116	880	2,156	14,319	818	13,950	38,020
September 4, 1948	5,506	17,645	1,981	7,182	8,598	94,893	23,721	68,969	72,308
August 28, 1948	5,682	17,722	2,165	7,491	8,818	95,504	23,281	‡66,425	70,853
September 6, 1947	5,288	16,413	1,892	6,476	8,649	85,627	20,963	56,101	57,211

***Finished and unfinished. †At refineries including natural blended. ‡Revised in Texas Gulf Coast.**

Bureau of Mines crude-oil stocks 222,709,000 bbl. as of September 4—up 439,000 bbl. One year ago 226,154,000 bbl.

FLAT CRUDE PRICES

Representative posted schedules per bbl.	
East Texas	$2.65
Kettleman Hills, California*	2.14
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	5.00
Eastern Ill. and Western Ind.†	2.77
Tomball, Texas Gulf Coast	2.83

***37°-37.9°. †35° and above.**

TRENDS

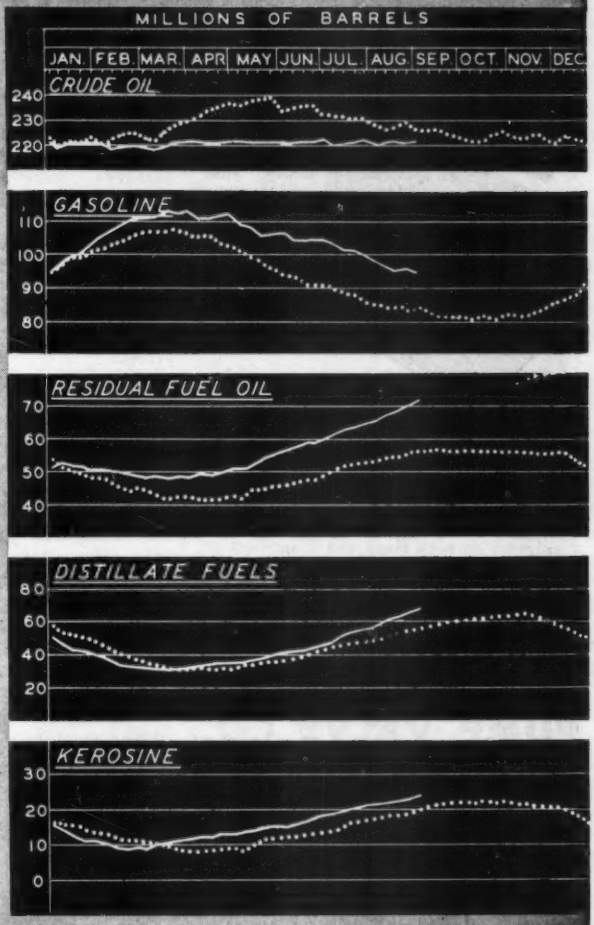
DAILY AVERAGE PRODUCTION FOR WEEK

	Sept. 11 crude oil	B. of M. Sept. demand	Sept. 4 crude oil
Alabama	1,400	1,200	1,350
Arkansas	82,450	90,000	82,450
California	953,000	955,000	952,000
Colorado	48,110	50,000	47,540
Eastern	64,750	66,300	64,200
Florida	800	800	800
Illinois	176,000	170,000	183,400
Indiana	25,100	17,000	21,500
Kansas	296,900	307,000	290,500
Kentucky	25,600	24,000	25,400
Louisiana	484,750	500,000	483,950
North Louisiana	113,650	.....	113,675
South Louisiana	371,100	.....	370,275
Michigan	49,600	46,000	42,800
Mississippi	126,900	131,000	129,500
Montana	25,710	27,000	26,140
Nebraska	400	700	400
New Mexico	131,535	138,000	132,135
Oklahoma	429,000	438,000	429,250
Texas	2,470,900	2,520,000	2,460,475
Dist. 1 (Southwest)	28,660	.....	28,800
Dist. 2 (Southwest)	179,950	.....	179,500
Dist. 4 (Southwest)	250,425	.....	250,400
Dist. 3 (Gulf Coast)	494,515	.....	494,050
Dist. 5 (Eastern)	49,150	.....	49,150
Dist. 6 (Eastern)	119,725	.....	120,025
East Texas field	312,800	.....	309,025
Dist. 7-C (West)	45,300	.....	44,575
Dist. 8 (West)	708,950	.....	706,425
Dist. 7-B (W. Central)	53,275	.....	52,175
Dist. 9 (N. Central)	141,150	.....	139,725
Dist. 10 (Panhandle)	87,000	.....	86,625
Wyoming	149,280	158,000	151,210
Total United States	*5,542,185	5,640,000	5,525,000
Change from prev. wk., up	17,185		

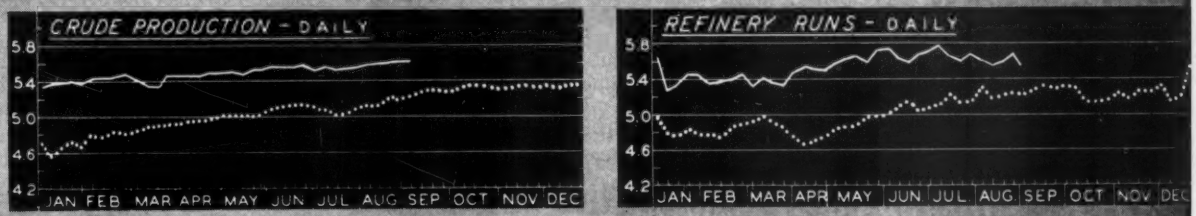
Total production January 1-September 11 †1,399,200,680 bbl.
Same period last year (crude plus cond.) 1,256,979,560 bbl.

*Not incl. 74,940 bbl. condensate. †Incl. 18,917,865 bbl. condensate.

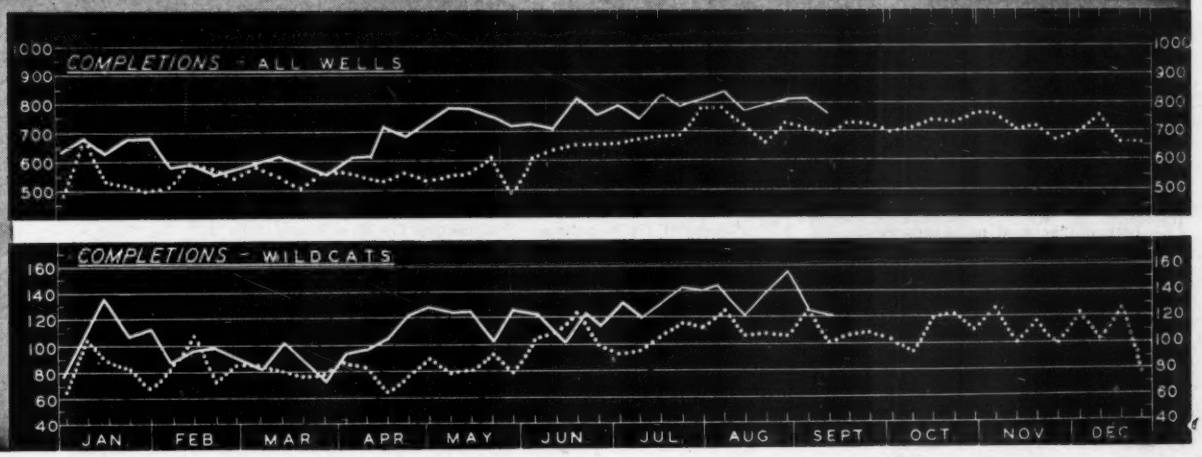
STOCKS IN UNITED STATES — 1947 ---- 1948



DAILY OPERATIONS — 1947 ---- 1948



WEEKLY COMPLETIONS — 1947 ---- 1948



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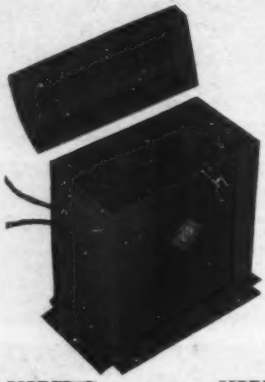

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MARKETS

A POTENTIAL strengthening in the gasoline market in the Mid-Continent area was seen last week as marketers reported a number of inquiries from leading suppliers on the West Coast as a result of the refinery workers' strike there. Gasoline shipments were most urgently sought after. Diesel oils will soon be in demand from the West Coast, one supplier said, unless the strike is ended shortly. He predicted little increase in demand for burning oils from the Mid-Continent area as a result of the strike.

This new source of demand for gasoline in the Mid-Continent area comes at a time, one supplier observed, when the market was beginning to show signs of becoming "sloppy." The California strike situation "will definitely affect the tone of the Mid-Continent gasoline market, and that effect will soon be apparent in market prices, one observer said. By the end of last week most refiners were reported to have lifted "most if not all" restrictions and allocations on gasoline.

No. 6 continued to be the weakest material in the products market. Stocks continued at high levels with very few movements of residual oils being reported. The excessively soft market for this material might continue for another 2 weeks, one refiner reported, but said that he expected a definite strengthening to be evident by the early part of October. As soon as some of the gas companies cut off the supply of natural gas to some of the heavy industries now burning this material, the demand for No. 6 residual oils will be greatly increased, he said.

With the extreme high level of light and heavy fuel-oil stocks, and with the peak of the gasoline demand now being successfully met, several refineries have been reported cutting down their runs. One major Mid-Continent area refiner made substantial reductions in refinery runs because of the temporarily excessive stocks of fuel oils. Another refiner said that while no reductions have been made yet, the present situation is definitely "hurting." One Kansas refiner reported recently that crude runs were being cut by 10 per cent because of full storage of No. 6 and added that he may have to reduce runs even further.

High stock levels were particularly predominant in the East Coast and Mid-Continent areas, while at the Texas Gulf Coast inventories of both light and heavy fuels were still behind last year's peaks.

High Fuel-Oil Stocks

Along the East Coast it was reported that with distillate fuel-oil stocks passing the 20,000,000-bbl. mark many distributors of fuel oil were beginning to express an interest toward increasing their customer lists, even to the point of active solicitation.

One supplier along the Atlantic Seaboard over the Labor Day holiday reported a reduction of 14 cents per barrel in heavy fuel-oil prices, bringing his posting to $2.96 per barrel, barge. One more major company increased its prices of light heating oils by 0.2 cent per gallon at principal points in New York and New England.

What was possibly the highest short-run demand for gasoline that has yet been placed on the oil industry was well taken care of over the Labor Day week end as was evidenced by the lack of complaints of shortages either by the consuming motorists or distributors.

Representative Quotations

Representative spot-market quotations of leading suppliers as of September 13, 1948. Figures are f.o.b. plant for tank-car shipment in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor	Texas Gulf Coast
Regular gasoline, 73-75 octane	10½-10¾	11.6-12* 10.5-11.9†	10½-11½
Premium gasoline, 78-80 octane	11¼-11½	10.6-13.4	11¼-12¼
42-44 w.w. kerosine	9½-9¾	10.3-11.7	9½-10¼
No. 2 straw fuel oil	9-9¼	9.4-10.1	9-9½
No. 6 residual	$2.00-2.20	$3.03-3.37	$2.10-2.65

*Branded (74-76 octane); †Unbranded (74-76 octane).

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	8½	8	8¼
Grade 18-55	10.2	9.6	9.9

LUBRICATING OILS

South Texas

200 vis., No. 2-3 neutral	12-14.5
750 vis., No. 3-4 neutral	15-17.25
2,000 No. 5-6 neutral	17-21

LUBRICATING OILS

Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	33
200 vis. No. 3 neutral, 0-10 pp.	19

Western Pennsylvania

145-155 vis. 10 p.t. bright stock	47
180 vis. p.t. neutral	45

CRUDE-SCALE WAX

Mid-Continent

130-132 A.S.T.M. melting point	6¼-6½

EQUIPMENT MEN ... in the News

Trammel To Head Pipe Department

E. H. TRAMMELL

H. B. Catlow, president of Republic Supply Co., announces the appointment of E. H. (Gene) Trammell as manager of Republic's pipe department with headquarters in Houston.

Trammell comes to Republic with a rich background of experience and wide acquaintance throughout the petroleum industry in both domestic and foreign fields. He served for more than 10 years in the materials division of Standard Oil Co. of New Jersey in South America and during the past 10 years has been engaged as export representative in New York for several leading oil-equipment manufacturers.

New Stainless Steel Finishing Plant Opened

Production at Republic Steel Corp.'s new Enduro Plant No. 2 in Massillon, Ohio, is now under way, George W. Putnam, manager of Republic's Central Alloy District, announced recently.

The new facilities substantially increase Republic's capacity for production of stainless steel sheets, the demand for which is steadily increasing. They supplement facilities known as Enduro Plant No. 1 where flat rolled stainless steel in widths up to 30 in. is produced. Sheets nearly double this width will be produced in Enduro Plant No. 2.

The new stainless-steel cold reducing, annealing, pickling, and finishing facilities of Plant No. 2 have been erected in existing buildings at Republic's Massillon steel plant. These buildings have been extensively remodeled, roofs raised, new crane runways installed and many improvements in lighting, heating, and ventilation made. The buildings were formerly part of the old Massillon Rolling Mill and during the recent war housed equipment for fabricating armor plate.

Major items of equipment which have been installed in these buildings are: four breakdown anneal and pickle lines; five intermediate and finish anneal and pickle lines; three 4-high mills consisting of one 66-in. reversing breakdown mill, one 54-in. reversing cold reducing and finish mill, and one 66-in. temper or skin pass mill; four slitters; two cut-up lines; two inspection benches; and one roll grinder.

Not all operations in the production of stainless steel by Republic are undertaken at the Massillon plant. The steel is melted and refined in electric furnaces, cast into ingots, and rolled into slabs in Republic's Canton plant. The slabs are shipped to Warren or Cleveland where they are rolled into heavy-gage coils on the Warren 42-in. or the Cleveland 98-in. continuous hot strip mills. The hot rolled stainless steel coils are then sent to Massillon either by truck or rail from Cleveland and Warren to become the raw material for the Enduro plants.

Conway Succeeds Robbins

J. S. CONWAY

R. E. STEWART

John S. Conway, formerly export sales manager for Koehring Co., Milwaukee, has been appointed general sales manager. At the same time, Koehring named John E. Chadwick assistant sales manager and R. E. Stewart export sales manager. In his new post, Conway succeeds J. F. Robbins who will become president and general manager of Capitol Equipment Co., a Koehring distributor in Harrisburg, Pa.

Bethlehem Supply Co. Announces Promotions

Bethlehem Supply Co. announces the transfer and promotion of H. V. Harder, formerly district manager in the Rocky Mountain area, to special representative in the general sales office with headquarters in Tulsa.

E. S. Lewis, formerly district manager in the Illinois area, has been transferred to the Rocky Mountain area as district manager, replacing H. V. Harder.

G. B. Sager has been promoted to district manager of the Illinois area, replacing E. S. Lewis.

Kerotest Elects New President

P. F. WILSON

Parker F. Wilson was elected president and director of Kerotest manufacturing Co. at a recent meeting of the board of directors. Former president Walter G. Swaney was named vice chairman of the board.

A familiar figure in steel circles for more than 20 years, Wilson has served in various executive capacities with Otis Steel Co., Wheeling Steel Corp., and more recently as president of Pittsburgh Steel Foundry Corp.

Wedge Appointed By Ansul Chemical

Franklin Wedge, former eastern manager for Ansul Chemical Co., has been appointed assistant to the president. He has moved from Philadelphia to the company's main office at Marinette, Wis.

With this assignment, Wedge, a well-known figure in the refrigeration industry, climaxes an 18-year career with Ansul. He is a member of the American Society of Refrigerating Engineers as well as the American Chemical Society.

Wedge was graduated from the Sheffield Scientific School of Yale University, class of 1918. During World War II, he served as a temporary member of the Coast Guard Reserve and for 2½ years helped patrol Philadelphia harbor.

Davison Visits Venezuela

W. H. Davison, president of Core Laboratories, Inc., returned recently from a trip to Eastern and Western Venezuela. During his vist he made a detailed survey of core analysis and petroleum-reservoir-engineering methods and techniques as practiced in that country. Administrative and engineering personnel expressed a keen interest in the possibility that Core Lab equipment, per-

(Continued on page 185)

Classified Advertising

The Market Place for the Oil Industry

UNDISPLAYED

All ads, 12 cents a word. Minimum charge, $3.00 per insertion.
Centered Line, any ad, $1.00.
Box Numbers count 9 words when replies are to be sent to our Tulsa Office. Replies forwarded without charge.

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$12.00 per column inch per insertion
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All classified advertising payable in advance.
10% Discount if 3 insertions are ordered at one time.
COPY DEADLINE, 9:00 a.m. Monday prior to each week's issue.

THE OIL AND GAS JOURNAL
P. O. Box 1260, TULSA, OKLAHOMA

EQUIPMENT FOR SALE

FOR SALE: Model 50 Wichita Falls spudder with steel mast, PA-100 International motor, butane equipped. Now working on 2500 ft. top to bottom hole. Available end of present well. Shelby McIntosh, Box 198, Owensboro, Kentucky. Telephone 2640-W.

FOR SALE: Bucyrus-Erie 24-L Trailer mounted spudder with casing reel, clutch driven sand reel, cat heads complete with cables and 6″, 8″ and 10″ Tools, joints 3¾ and 4¼. Water pump, light plant, set sectional A shear poles with blocks. $6500.00 Cash F.O.B. Princeton, Indiana. A. H. Bigler, Phones 219 or 494.

FOR SALE

No. 83 Speed Star Spudder, Mounted full trailer on hard rubber wheels, 4000′ drilling and sand lines, complete tailing-in tools, dog house, Kohler light plant, etc. Very portable, good condition.

W. R. BOWMAN
214 Kennedy Bldg. Phone 7-3018 or 2-2633
Tulsa, Oklahoma

SHOT HOLE DRILLS
LARGE AND SMALL

All are truck mounted, rotary, chain pull down, smallest pump size 3½ x 5. Some are in excellent condition, others need repairs. Price FOB Dallas from $3,000.00 to $8,000.00 including truck. For details write 8800 Lemmon Ave., Dallas 9, Texas.

STEEL STORAGE TANKS

2—18,500 bbl. Welded

1—17,500 bbl. Riveted

1— 5,000 bbl. Riveted

Above tanks all with steel cone roofs, now standing; locations Ingleside and Wichita Falls, Texas. Detailed specs. and prices available on request.

Horwitz Pipe & Steel Co.
Tulsa, Okla. Ph. 2-9128

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO.
Box 107, Red Fork Station, Tulsa, Oklahoma

FOR SALE: Wilson Master Model Winch powered by 6 MZR Waukesha engine. Unit mounted on one and one-half ton Chevrolet truck equipped with fifty foot single pole telescoping mast. Terms. Melton Supply Company, Seminole, Oklahoma.

FOR SALE: Wilson Mogul draw works, powered by G.A.K. Waukesha engine. Good condition, priced for quick sale. Terms. Melton Supply Company, Seminole, Oklahoma.

TWO CARDWELL RL double drum spudders. Top condition. Equipped for immediate operation. 59′ masts, light plants, lines, and tools. For prices and inventory write: Barnes Drilling Co., 22 W. Fourth Street, Tulsa, Oklahoma.

FOR SALE: Brand new 1948 Bucyrus Erie 36-L, trailer mounted, latest model, has never turned a wheel. 15″ to 5½″ tools; Wilson elevators; new 4 cylinder light plant; new blower and forge; 100′ of 12″ pipe, 900′ of 10″, 1700′ of 7″; 1900′ of 5½″, all seamless; 8 round thread; new ⅞ drilling line; new ⅝ sand line; casing spider—fishing tools. G. W. Miller, 706 Cherry St., Mt. Carmel, Ill., Telephone 166-J.

EXTRA good 5½ Keystone Joplin special Trailer mounted 8.25 dual tires. Air brakes, nearly new International motor. Lots of tools. 10″ down. Good lines. L. C. Williamson, Pritchett, Colo.

FOR SALE: Two new 6NKU Waukesha. Delivered 7/1/48. Stored under cover. List price. No bonus. No trade. Harris Drilling Company, 525 Wichita National Bank Building, Wichita Falls, Texas.

MANUFACTURERS LATEST DESIGN

Hydraulic Casing Pulling Units. Complete line of equipment. Units made to your specifications. Truck Mountings or Skid Units. Repair Service and Parts.

OKLAHOMA MACHINE & SUPPLY CO.
Ada, Oklahoma

EQUIPMENT FOR SALE

DRESSER COUPLING PARTS: 1,920-20″ x ⅛″ center rings, 3,840 followers—Used—Good Condition—Not cleaned. Colorado Interstate Gas Company, P.O. Box 1087, Colorado Springs, Colorado.

ONE doubledrum skidmount pipe pulling winch. 4,000′ ¾″ line capacity. Jerkline and cathead attachment. White motor powered. One 1943 GMC six-by-six truck equipped with winch. All in A-1 condition. Biehl Producing Co., 106 Seventh St., Marietta, Ohio. Phone 1075-M.

PIPELINE Construction Equipment for Sale: Pipe cleaning machine with priming head, traveling or stationary, 6″ to 12″, excellent condition, $1,350. Two T40 International tractors with pipelayer attachments, good condition, very cheap. Contact C. W. Sternberg, 8250 Wier Drive, Houston, Texas. Phone Preston 7043.

FOR SALE: Located at Bartlesville, 1—Model 37 Sullivan Shot Hole Drill mounted on 1942, 134″ wheel base, 2 speed, dual tired truck. Price $4,000. Cities Service Oil Co., Patridge, Bartlesville, Okla.

FOR SALE: Wilson Super Model Winch powered by 6 MZR Waukesha engine. Terms. Melton Supply Company, Seminole, Oklahoma.

APPROXIMATELY 2,000′ of 2⅜″, Range 1, internal upset drill pipe, with regular A.P.I. tool joints in very good condition. Ideal for core drilling. Price $1.00 per ft. Located at Seguin Machine Shop, Seguin, Texas. Contact Box 1022, Del Rio, Texas.

FOR SALE: Good used cross reaction chamber, 48″ OD by 38″ ID by 41′ 2″ long, located at Malco Refineries, Inc., P. O. Box 660, Roswell, New Mexico.

PIPE FOR SALE: 2000′ of 20 lb. and 2000′ of 17 lb. 6⅝″ I.D. casing. Take all at $2.25 per foot. 312′ of 8″ I.D. 28 lb. @ $3.00 per foot. Would trade for 4⅞ or 6¼ casing. Boyer Oil Co., Box #35, Iola, Kansas.

FAILING 1500-ft. holemaster, 38-ft. mast, 28-ft. Kelly, 4½ x 6 G.D. pump, sand reel, H. D. drillhead, 300′ 2⅞″ drill pipe, bits, tools, etc. Mounted on 1941 White truck, 700 gal. water tank on 1939 Ford truck, new motor, $11,000. Write: S. P. Holcomb, 605 No. 14th, Duncan, Oklahoma. Phone 1385.

FOR SALE

12—230 H.P. Type 10 Bessemer New 17″ Power Cylinders complete ready to run with 16″ to 18″ Compressors. 1—230 H.P. Clark Horizontal with Compressors. Located Salem, Illinois.

ENGLE PETROLEUM, Incorporated
Box 655, Evansville, Indiana

2—74,000 Bbl. Cap. 140′x40′ Vertical Steel Storage Tanks

A-1 Condition Clean. Immediate Delivery at Morgantown, W. Va.

Darien Corp., 60 East 42nd Street, New York, N. Y.

TOWERS & VESSELS

1—TOWER 6′ I.D. x 84′; Shell 1⅛″ Thick ASTM-A-70 Fire Box Plate; 18″ Manways, Design Pressure 350#, Temp. 550° F.; Stress Relieved & Radiographed; 32 Trays, Shell Weight 97,000 lbs.
1—TOWER 9′ x 88′ 6″; Shell ¾″ thick; ASTM-A-70 Fire Box Plate; 18″ Manways; Design Pressure 125 lbs. Temp. 500° F.; Stress Relieved & Radiographed; 36 Trays; Shell Weight 111,000 lbs.
1—TOWER 5′ 6″ I.D. x 103′ 4″; Shell 1½″; ASTM-A-70 Fire Box Plate; 18″ Manways; Design Pressure 500 lbs.; Temp. 500° F.; Stress Relieved & Radiographed; 45 Trays; Shell Weight 144,000 lbs.
8—VESSELS 4′ 6″ I.D. x 58′; Shell ⅜″; ASTM-A-70 Fire Box Plate; Design Pressure 300#—Stress Relieved & Radiographed; Weight 36,000 lbs. each.
8—VESSELS 42″ I.D. x 35′ 4″ Over-all; Shell 3⅛″; Working Pressure 2,500 lbs.; Weight 72,000 lbs. each; Travelers Insurance Certificate.

PRINTS & TECHNICAL DATA AVAILABLE ON REQUEST.
INSPECTION INVITED. IMMEDIATE DELIVERY

PETROLEUM EQUIPMENT, INC.
P. O. BOX 887 TULSA, OKLAHOMA TELEPHONE 2-6291

EQUIPMENT FOR SALE

SULLIVAN 22 H.D. CORE DRILL
Practically new. N-2 hydraulic swivelhead.
R. B. McElwaine, P.O. Box 127
Little Rock, Ark.

USED Le Roi 6-, 8-, and 12-cylinder gas engines, complete and in A-1 condition for oil industry power. Priced to sell. Also one Model NKU Waukesha $1500. Write or call, today. General Machine & Supply Company, P. O. Box 72, Wichita Falls, Texas.

DRILLING equipment, reconditioned ready for delivery, Failing, Franks, Eli Tulsa, Longyear, American, Sullivan, Fort Worth, Wichita, Keystone, National, Standards. Also steel derricks, cable tools, cable and good used casing, most sizes. Pressey & Son, Pueblo, Colo.

BARGAINS FOR SALE

100 KW. DIESEL ENGINE GENERATOR SETS

15—100 KW. 120/240 V.D.C. Delco Generators dir. con. to 150 HP., Model GDB-8, 5½x7, 8 cyl. Superior Diesel Engines, electric starting with muffler, power panel and accessories.

2—100 KW Delco 220/440 v. 3 ph. 60 cy. AC Units same as above.

PRACTICALLY AS GOOD AS NEW
ONLY USED FOR SPARES

Duquesne Electric & Mfg. Co.
Pittsburgh (6), Pa.

1—J L 1335 BUDA GAS ENGINE. Completely overhauled and guaranteed. With or without engine starter and clutch power take off.

2—E K U Waukesha gas engines. Completely overhauled and guaranteed. One has engine starter.

3—E K U Waukesha gas engines. Mounted on steel rig drive skids. Good running condition.

2—Superior Model ORD 6-cyl. Diesel engines. Complete with skids, output clutch, radiators, and all standard equipment. Excellent condition.

EMPIRE MACHINERY COMPANY, LTD.
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PARTS FOR ARMY TRUCKS

New and Used

Largest stock in America, 6x8, 6x4, 4x4, 4x2. All items guaranteed. Largest auto wrecking house in the west with most complete stock of new and reconditioned parts for all cars and trucks. New jeep power units complete with radiators and stub shafts. Fast service.

PIONEER AUTO WRECKING CO.
732 W. 13th Ave. Denver 17, Colo.

WE BUY and SELL

Steel Pipe and Tubing

Pipe Fittings—Well Casing

Culverts and Valves

SONKEN-GALAMBA CORP.

2nd & Riverview, Kansas City 18, Kans.

EQUIPMENT FOR SALE

FOR SALE: One AC Generating Unit; one 300 KW, 375 KVA 2300 Volt reconnectable for 480 volt 240 RPM 3-phase 60 cycle heavy duty 450 HP Bruce Macbeth Natural Gas Engine, directly connected to General Electric Generator complete with switchboard. P.O. Box 2073, Tulsa, Oklahoma.

FOR SALE OR TRADE: Large Wichita Falls Spudder with Steel Mast 52 ft. high. 110 Hp. LeRoi drilling motor. Steel dog house. Drilling and fishing tools. Bits from 6 in. to 15½ in. Spudder located in Illinois. Charles S. Anderson, P.O. Box 31, Telephone 441, Coffeyville, Kansas.

BUCYRUS-ERIE—24L Drill Rig, Trailer Mounted; over 5000 feet line; 2 strings of tools 4-inch to 10-inch; 2½ Ton G.M.C. Tandem Dual Truck with detachable A-Frame and winch; 8-ft. x 10-ft. metal tool shed; Kohler Light Plant; 470-ft. new 10-inch wrought iron pipe; some used 6 and 8-inch pipe; good assortment of all necessary tools and equipment. All in A-1 condition. Sell as a whole or part. Lealand West, Telephone 4931 or 4391, Scottsburg, Indiana.

FOR SALE

No. 2 Kearney & Trecker heavy duty milling machine, slightly used and in top condition, Timken bearings, new clutches, new G.E. 7½-H.P. 60 cycle ball bearing motor.

TEXACONE COMPANY
Box 4236, Dallas, Texas

FOR SALE

1—Complete set of seismograph equipment. Immediate delivery and ready for field operations. Contact Mr. Patridge, Cities Service Oil Co., Bartlesville, Okla.

RADIO TRANSMITTER AND RECEIVER General Electric Type TCK-4. Two complete units with spare parts. 100 Watt (voice), Range 2000 to 18,100 Kc.

LUCEY PRODUCTS CORPORATION
Tulsa, Oklahoma

25,000 GALLON
HORIZONTAL TANKS

10—25,000 gal. Lapweld Construction 10′ 6″ x 40′ 6″ overall, ⅜″ shell and ⅞″ convex head plate thickness, designed 50# PSI, used, excellent condition. Suitable for storage fuel oil, gasoline, etc. Write for complete details.

Location: Alliance, Nebr.

HORWITZ PIPE & STEEL CO.
Ph. 2-9128 Tulsa, Okla.

FOR SALE

15,000′—2½″ Std. Black Pipe, 21′ R. L. Plain ends. 80c per ft.

5,000#—½″ Def. Reinf. Bars, 6½c per #.

20,000#—16 ga. C. R. 48 x 120 Steel Sheets, 13½c per #.

700—Steel Leg Pallets, 11″ high, 29″ wide x 34½″ long, $3.75 ea.

10,000# 1″ x 1½″ Plasterers Channels, R. L., 7c per #.

WRITE—DO NOT PHONE

J. L. JATIS STEEL PRODUCTS
6822 S. Rockwell St.
Chicago, Ill.

EQUIPMENT FOR SALE

FOR SALE: 1 Model #36-L Bucyrus-Erie Spudder; 1 Model #350 Jumbo-Buster drawworks. F. D. Bridges, 1109 Euclid, Oklahoma City, Oklahoma. Phone 3-7810.

FOR SALE: Model 55 Wichita Falls Spudder with telescoping steel mast; steel tool house and tools for 7″ hole; powered with LeRoi motor in excellent shape. $5500.00 at present location. Box C-583, care The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE—One #45 Heavy Duty Fort Worth Spudder complete with tools to drill 5,000′ hole. Write Joseph J. Snyder, 209 Stewart St., Carmi, Illinois.

EQUIPMENT WANTED

WANTED: Small mounted trenching machine. Keystone Pipe & Supply Company, 902 Burk Burnett Bldg., Fort Worth 2, Texas.

WANTED: PROPANE STORAGE TANK, also Propane unloading pump or compressor. Give specifications, condition, price & shipping point. Central Development Company, Aylmer, Ontario, Canada.

WILL buy "drilling in" unit or spudder, with or without tools, capable 4,000 to 6,000 feet. Also old wells for salvaging. Give price, location and pertinent particulars in first letter. Box 435, Lawrence, Kansas.

WANTED: 6x12 Wilson-Snyder or 7x12 Gardner-Denver mud pump. Will consider other makes of medium size and weight. Box 1022, Del Rio, Texas.

WANTED

96′ or 97′ Lee C. Moore Cantilever Mast. B & B Drilling Company, Box 309, Pauls Valley, Oklahoma.

HELP WANTED

CAPABLE MECHANICAL ENGINEER experienced in supervising maintenance of rotary drilling rigs. Good salary. Give past record and references. Correspondence confidential. Box C-576, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE PETROLEUM ENGINEER, under 30, production oil tool sales. Must be willing to locate in any Mid-Continent oil field. Salary and bonus. Six months' training program. Company car furnished. Company established 30 years. Application by letter only: Box C-574, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Experienced man in oil field operations, with full knowledge of the oil business, including production, ability in leasing and negotiating drilling deals. Box C-565, The Oil and Gas Journal, Tulsa, Oklahoma.

MAJOR oil company desires experienced Seismic Interpreter, preferably with Party Chief experience. Permanent location in Division Office, Fort Worth, Texas. Salary open. Address: Box C-592, The Oil and Gas Journal, Tulsa, Oklahoma.

THE Carter Oil Company is seeking a graduate Petroleum Engineer with extensive experience in production, for assignment to a responsible senior engineering position. An adequate salary is provided for this position and there are excellent opportunities for advancement. In addition there are liberal Company benefit and vacation plans. Please include statement of experience when writing to The Carter Oil Company, Box 801, Tulsa, Oklahoma.

LANDMAN: By major oil company for work in Texas. Must be experienced in lease buying and title curing. Age limit 40 years. Box C-596, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL company purchasing department clerk wanted. Applicant should be familiar with materials used in all departments, refining, pipeline and production. Field experience helpful, excellent opportunity. Give complete experience record. Box C-580, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Experienced Surveyors for Gravity Crews, minimum domestic salary $250.00, Foreign $350.00. Best working conditions. Box C-584, The Oil and Gas Journal, Tulsa, Oklahoma.

HELP WANTED

AN Independent Oklahoma oil firm needs an assistant Purchasing Agent. Must have practical knowledge of production, refining and pipe line equipment and supplies. Letter of application should state complete experience, references and salary expected. Box C-581, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL Industry Employment Service, 319 Castle Bldg., Tulsa, Okla. Tom Robinson, Mgr., phone 4-5974. No fees to pay. Foreign service in Persian Gulf area. Needed now: Production and Petroleum Engineers $450 to $650. Rotary drillers $480, age limit 55. Derrickmen age 25 to 35. All must be experienced. Write for details.

PETROLEUM ENGINEER

Experienced graduate petroleum engineer to supervise field operations with production department of independent refinery on Texas Gulf coast. Must be between 28 and 35 years of age. Must have thorough understanding of drilling, well completion, and relative production problems. In reply submit complete education and experience record stating salary expected.

P. O. Box 1581, Corpus Christi, Texas

United Geophysical Company, Inc.

585 East Colorado Street

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offers employment to experienced Gravity and Seismic

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in both North and South America and the Middle East

OIL EXPLORATION

We need men with experience for jobs now open on seismograph crews as

PARTY CHIEF
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Permanent jobs at good salary.

Geotechnical Corp.
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ENGINEERING

During the next several months we will increase our Engineering Organization engaged in the design of Oil Refinery Plants and Power Plants. Location Cleveland, Ohio. The men we need should be qualified as draftsmen, designers, checkers or in higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, mechanical or electrical. For presenting your qualifications and prompt consideration, write to us for application form.

ARTHUR G. McKEE & CO.

2300 Chester Ave., Cleveland 1, Ohio

HELP WANTED

CHIEF PETROLEUM ENGINEER: Attractive position open for a young man with five to ten years experience in oil production at a responsible level. Capable of originating decisions and exercising own judgment on matters of technical and responsible matters. A graduate in Petroleum Engineering, Mechanical Engineering, or Chemical Engineering. Good appearance and plenty of executive ability. Salary $10,000. All replies confidential. Write full details to: Chas. J. Loveless, Personal Service, 508 Mayo Building, Tulsa, Oklahoma.

SITUATIONS WANTED

GEOLOGIST, 31, married, no children, B.S. degree, 7 years' experience geology-petroleum engineering; desires position in subsurface geology; foreign or domestic; speaks Spanish; available January 1. Box C-585, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED OIL EXECUTIVE

GRADUATE PETROLEUM ENGINEER, 40 years old, 15 year administrative background in organization, planning, and direction of production, drilling, and pipeline operations. Good knowledge of geology. Sales, purchasing, materials control and trading experience. Presently employed in supervisory position, Gulf Coast, desires to make connection as executive assistant to manager of substantial and aggressive independent oil company with future. Gulf Coast, West Texas or Rocky Mountain areas preferred. Box C-562, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM Geologist experienced with sample examinations, structural interpretations, mapping of assembled data and reports on local or regional geology desires connection with independent oil or drilling company located in Tulsa. P. O. Box 1884, Tulsa, Okla.

EXPERIENCED lease man with car, available for leasing, blocking of wildcat acreage or procuring title requirements. Best of references. Will go anywhere. Robert Galbreath, Jr., 2808 South Cincinnati Ave., Tulsa, Oklahoma. Phone 4-9548.

INDEPENDENT Geologist, Surface and Subsurface, would like to make connection with Independent oil company operating in Rocky Mnt. or Mid-Continent area. Box C-594, The Oil and Gas Journal, Tulsa, Oklahoma.

NEW Ph.D. chemical engineer, physical chemistry, petroleum engineering minors, available November. Experience, 2 years refinery engineering, 2 years hydrocarbon phase-equilibria research. Desire connection small organization, preferably Southwestern. Enjoy administrative work, some travel. Box C-595, The Oil and Gas Journal, Tulsa, Oklahoma.

COMMERCIAL PILOT: Single and multi-engine, land and sea, desires executive pilot position with reputable firm. Two years pipe line experience. References upon request. C-591, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST: Licensed Civil Engineer, 42, desires work performing geologic exploration, prospecting and scouting for oil in Nevada and adjoining areas. Box C-593, The Oil and Gas Journal, Tulsa, Oklahoma.

PURCHASING AGENT with twenty years experience in all phases of oil industry. Graduate engineer, highly capable in inventory control and systematic handling of budget purchasing. Forty years of age, married and VERY SOBER. Presently employed in a very responsible position but desire change. Prefer good independent oil company or drilling contractor in Mid Continent area. Can also handle lease buying and title work. Box C-597, The Oil and Gas Journal, Tulsa, Okla.

CERTIFICATED airline transport pilot desires position with executive or company as pilot or representative. Approved school graduate, single, multi-engine, land and instrument ratings, 2½ years air force group and station commander, 3400 hours, mostly DC-3S, foreign experience, speak, translate, good French, married, 38, can go anywhere, bank references, wire, write, Pilot, 727 N. Ash, Pauls Valley, Oklahoma.

PATENT ATTORNEYS

PATENT Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 418, 815-15th Street, N.W., Washington 5, D. C.

LEASE AND DRILLING BLOCKS

NOTHING ahead. Nope, there's nothing ahead for the country that pays shirkers more than it does workers. The advantage of being right lay in not squandering time so in the long run you can not make failure add up to success. Nature does not reverse the brand of the simple in order to change the wise. Regarding success, George Gallup has said that degrees should not be conferred until 25 years after graduation, but there are two young men out of Central High at Devils Lake, North Dakota, this year who'll bear watching. One had a four year average of 96.12 and the other 94.12. What has all this got to do with oil and a drilling contract? Nothing, unless you feel that a young man with a right smart reputation (94.2) back in 1912, and who has gone even further ahead since then, will give you a run for your money. This is a five year State Oil and Gas Lease Assignment approved by Colorado State Board of Land Commissioners September 10, 1947. SE Quar. 16, TSP 3N, Range 94 West, Moffat County —in proven oil territory. Lessee retains 2½% overriding royalty. Nope, I'm not looking for suckers. I'm looking for success among oil companies that want to go ahead. Write Wm. Leonard Fisher, Attu, Alaska.

TENNESSEE—80,000 acres; fee $3 per acre; liquidation; est. 100 miln ft. timber; full mineral rights, details E. Jester, 12744 Vanowen, N. Hollywood, Calif.

HAVE been offered $35,000 for a ⅝ interest in my oil and gas structures in North-Central Tenn., the money to be used to drill four test wells thereon. I will give a ½ interest therein for that amount and for that purpose. N. M. Sauls, Geologist, Cookeville, Tenn

HAVE 800 acres. Offsetting well flowing 35 bbls. per day after 23 years, 41 gravity oil, no water. Approx. 4,000 feet. Excellent sub-surface geology, Central Texas. Want development. Box C-569, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE: Producing oil lease, 480 acres Osage County, Bartlesville Sand. Gas repressuring plant. Production 12 bbls. daily. Six-room modern lease house. E. E. Shannon, Box 631, Sedan, Kansas. Phone 154.

HAVE 1680 acre Oil and Gas Lease Stephens County, Texas. Flowing offset production. Subsurface geology by very reputable geologist. Want development. Will deal with principals only. No brokers. JESSE McKEE & SON, EASTLAND, TEXAS.

RARE Opportunity, Greenwood County, Kansas. Bartlesville sand Seeley area. Two proven leases with full information. One of these leases already under flood. You can make your own deal on fair basis. Box C-596, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE: Secondary recovery project, 100 acres of proven Bartlesville sand in S. E. Kansas on 485-acre lease. Cores indicate minimum of 2750 bbls. per acre recoverable oil in three years. 400-ft. depth, 14 fully equipped wells now producing 32 gravity oil. Tested by air and water. Will gravity 120 bbls. water per day. Air increased production 640 per cent in twelve days. Box C-599, The Oil and Gas Journal, Tulsa, Oklahoma.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING

Texas, New Mexico, Oklahoma, Louisiana and Illinois.

Inquiries Invited

B. D. BUCKLEY

60 Broadview Drive, Clayton (5), St. Louis, Missouri

ROYALTIES

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

DEEDED ROYALTIES
San Juan Basin & Permian Basin. Write Harry S. Wright, Wright Bldg., Farmington, New Mexico.

WE will buy producing or non-producing oil royalties. Send particulars. Standard Security Company, 115 Broadway, New York 6.

BUSINESS OPPORTUNITIES

FOR SALE: Fully equipped Oil Field Machine Shop. Two portable welding trucks. Good location, good business. Priced to sell. S.R.S Machine and Supply Company, Box 824, Thermopolis, Wyoming.

FOR RENT

FOR RENT: Two offices exceptionally well furnished; with services of experienced Oil Secretary. Miss Pollock, 1602 Commerce Building, Houston, Texas, Preston 1174.

LEGAL BLANKS

BURKHART LEGAL BLANKS since 1908. Oil-Gas (all states), Business, Real Estate, Legal Forms, Leases, Revised With Government Regulations, Commercial Printing, Catalog and Samples on request. Burkhart Printing & Stationery Company, 115 South Cincinnati, Tulsa 3, Oklahoma.

REAL ESTATE

MOVING TO HOUSTON?
Warehouse and Office Building on Supply House Row; Lease—$150/Month. J. N. Yeager, 602 Citizens State Bank, Houston 2, Texas.

FOR SALE

TRUCK LETTERING AND TRADEMARK DECALS made for your trucks and equipment. Easy to apply, uniform, distinctive, economical for small or large needs. Write for catalog. MATHEWS COMPANY, 827 S. Harvey, Oak Park, Illinois.

FOR SALE: Two (2) Burroughs Moon Hopkins Machines. Specially adaptable to oil accounting for preparing crude run statements and prorating amounts between interest owners. Used approximately 18 months. Excellent condition. Write Box C-589, The Oil and Gas Journal, Tulsa, Oklahoma.

ALUMINUM PAINT
200—5 Gallon Cans
An extremely high Quality Exterior-Interior Spar Varnish vehicle. Highly polished Lining Bronze Paste Aluminum pigment in separate container. Ideal for Brick, Wood or Metal. "IRON-CLAD IS SOLD ON A MONEY-BACK GUARANTEE."
Reg. price $4.95 gal.
Sell any part $2 gal.
NATIONAL
606 Walnut, Kansas City 6, Mo.

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1948-49 Texas Oil Directory ready for delivery soon
Covers Over 200 Towns—Over 30,000 Listings
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Save $2.50—Send this "Ad" and $7.50
To:
Petroleum Personnel Research
Apt. 9, 508 Richmond, Houston 6, Tex.
THIS OFFER VOID AFTER OCT. 1, '48

Equipment Men

(Continued from page 181)

sonnel, and service might be available to their operations in the near future. Davison also indicated that, with the establishment of regular passenger and freight flights directly to and from operating areas in Venezuela, the practice of quick freezing cores in South America for subsequent analysis in the United States was being given serious consideration.

Worthington Appoints Ellis

F. J. ELLIS

Frank J. Whelan, vice president, Worthington Pump & Machinery Corp., announces the appointment of Frederick J. Ellis as assistant merchandising manager, pumps and compressor sales.

Formerly assistant manager of reciprocating pumps sales division, Ellis will head up distribution of standard pumps and compressors through oil-field distributors.

Ellis resides at 248 Van Winkle place, Rutherford, N. J.

Read Elected Secretary

WARREN A. READ

Warren A. Read, formerly with Ernst & Ernst, Denver, national firm of accountants, has been elected secretary of Texoma Supply Co., according to announcement made by Carl J. Hochenauer, president. Read, formerly with Price, Waterhouse & Company, Chicago, is a graduate of University of Illinois. He served 3 years in the air corps of the United States Army during the recent war.

Ryerson Holds Open House

Joseph T. Ryerson & Son, Inc., recently staged on open-house party at its new plant in Emeryville, Calif., in celebration of the opening of this thirteenth unit in a nation-wide group of steel-service plants.

About 3,000 persons attended, representing almost every city and town in northern California. Visitors were taken on a tour of the plant, and shown the company's facilities for stocking, handling, cutting, and shipping steel of all kinds. They were served dinner in eight dining cars of the Southern Pacific Railroad, secured especially for the occasion and parked on sidings adjoining the plant. A large tent was erected adjacent to the plant, in which refreshments and dinner were also served.

Among officials of the company on hand to welcome guests were Everett D. Graff, president, Robert C. Ross, vice president in charge of operation, and Harold B. Ressler, vice president in charge of sales, all from Chicago. Wayne D. Dukette, manager of the plant, was in charge of arrangements for the party and played the role of host.

Bettis Names Elliott

Bettis Corp., Houston, distributors of Bettis steamers, Pyle-National turbines and turbogenerators and other specialties, announces the appointment of Don Elliott as sales representative for the Rocky Mountain area. He will reside in Casper, Wyo.

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Washington 25, D. C. Notice is hereby given that the lands listed herein are offered through sealed bids on the terms hereinafter specified, to qualified bidders of the highest cash amounts per acre as a bonus for the privilege of leasing the lands under sec. 17 of the Leasing Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. sec. 181), as amended. All bids must be submitted to the Director, Bureau of Land Management, Washington 25, D. C., on or before 1 p.m. of the date set out herein. Each bidder must submit with the bid one-fifth of the amount bid in cash or by certified check on a solvent bank or by money order made payable to the order of the Treasurer of the United States, and file the showing of qualifications to receive a lease required under 43 CFR 192.42 (b) and (c). The envelopes should be plainly marked that they are not to be opened before the date and hour set out herein, and should show the number of the parcel and the name of the field. No bids received after the hour fixed herein for receiving bids will be considered. The remainder of the bonus and the annual rental must be paid and an acceptable surety bond in the sum of at least double the amount of rental, but in no case less than $1,000 nor more than $5,000, must be furnished by a successful bidder prior to the issuance of a lease. An acceptable $5,000 surety bond will be required prior to commencing drilling operations on the land. The deposits of the other bidders will be returned upon acceptance of the successful bids. Bidders are warned against violation of section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids. Royalties payable to the United States will be at the rate of 12½ per cent to 25 per cent for oil, and 12½ per cent to 16⅔ per cent for gas, in accordance with Schedule B in the lease form. Annual rental will be at the rate of $1.00 per acre. The lands are in the Wilson Creek field, 6th P.M., Colorado, and are offered in the following parcels: T. 2 N., R. 94 W., Parcel No. 1, sec. 10, N½NE¼, SE¼NE¼, 120 acres. Parcel No. 2, sec. 11, NW¼, N½SW¼, SE¼, 400 acres. T. 3 N., R. 94 W., Parcel No. 3, sec. 13, SW¼, 160 acres. Parcel No. 4, sec. 13, S½SE¼, 80 acres. Parcel No. 5, sec. 24, NE¼, 160 acres. Parcel No. 6, sec. 24, W½SE¼; sec. 25, NW¼NE¼, 120 acres. Total 1040 acres. All of these lands lie within the approved area of the Wilson Creek unit agreement, and in accordance with 43 CFR 192.41, any successful bidder will be required to file prior to the issuance of a lease, evidence that he has entered into an agreement with the unit operators for the development and operation of the lands in the proposed lease under and pursuant to the terms and conditions of the approved unit agreement, or an affidavit giving satisfactory reasons for failure to enter into such an agreement. Bids must be submitted on or before 1 p.m., Daylight Saving Time, September 29, 1948, and must be submitted on each parcel separately, but no objection will be made to the award of more than one parcel to the same successful bidder. Marion Clawson, Director.

ADVERTISERS

Albert & Davidson Pipe Corp. 174
Allied Steel Products Co. 162
Allis-Chalmers Mfg. Co. 20
Alten's Foundry & Machine Works, Inc. 164
Aluminum Co. of America 10, 34
American Cable Division of American Chain & Cable Co., Inc. ..... Inside Back Cover
American Hoist & Derrick Co. 96
American Institute of Mining and Metallurgical Engineers, The 180
American Iron & Machine Works Co., 100, 101
American Locomotive Co., Diesel Engine Division 47
American Petroleum Institute (Oil Industry Information Committee) 56
American Roller Bearing Co. 128
Arco Company, The 27

B & W, Inc. 150
Baird Mfg. Co. 157
Baker Oil Tools, Inc. 60
Baroid Sales Division, National Lead Company 123
Beico Industrial Equipment Div., Inc. 110
Bethlehem Supply Co. 160
Blaw-Knox Company 21, 110
Born Engineering Co. 147
Bovaird Supply Co., The 51
Bowser, Inc. 42
Brewster Company, Inc., The 118, 119
Cameron Iron Works, Inc. 55
Cardwell Mfg. Co., Inc. 152, 153
Carnegie-Illinois Steel Corporation .. 48, 49
Cavins Co., The 102
Chicago Pneumatic Tool Co. 36
Clark Manufacturing Co., The 140
Classified Advertising 182, 183, 184, 185
Cleveland Trencher Company, The 142
Clinton Machine Co. 114
Crose Mfg. Co., Inc., M. J. 143
Dean Brothers Pumps, Inc. 180
Dragon Manufacturing Co. 175
Dresser Industries, Inc. 25, 92, 117
Dresser Manufacturing Division 117
Drilling Specialties Co. 154
du Pont 43, 44
Dynamatic Corp., Subsidiary of Eaton Mfg. Co. 170
Eastman Oil Well Survey Co. 15
Eaton Mfg. Co. (Axle Division) 169
Equipoise Controls, Inc. 147
Fairbanks, Morse & Co. 2
Falstrom Co. 147
Fisher Research Laboratory, Inc. 102
Foster Co., L. B. 174
Four Wheel Drive Auto Co., The 28
Foxboro Company, The 22
Gaso Pump & Burner Mfg. Co. 11
General Electric Company 8, 9
Gilbert Co., L. M. 147
GMC Truck & Coach Div., General Motors Corp. 50
Goulds Pumps, Inc. 106
Grancell, I. H. 149
Grinnell Company, Inc. 126
Hagan Corp. 54
Harvey & Co. (London), Ltd., G. A. 97
Hewitt Rubber Div., Hewitt-Robins, Inc. 16
Hobbs Mfg. Co. 143
Hudson Engineering Corp. 132
Hughes Tool Co. ..... Back Cover
International Harvester Co. 82
Jones & Laughlin Supply Co. 7
Jones Company, The S. M. 108
Kelso-Burnett Electric Co. 87
Kennametal, Inc. 166
Knox Industries Corp. 81
Kobe, Incorporated 25
Koppers Co., Inc. (Fast's Coupling Division) 19
Kysor Heater Co. 180
Lane-Wells Company 148
Leece-Neville Co., The 102
Levingston Shipbuilding Co. 53
Link-Belt Company 1
L-K Pump Valve Co. 178
Lummus Co., The 17, 18
MacClatchie Manufacturing Co. 3
Manzel, Inc. 171
Mark & Co., Clayton 159
Marley Company, Inc., The 5
McCord Corporation 143
McCullough Tool Company 134
McDowell Mfg. Co. 110
Midwestern Engine & Equipment Co., Inc. 141
Mission Manufacturing Co. 131
Multi-Metal Wire Cloth Co., Inc. 175
Mutual Chemical Company of America 120
National Airoil Burner Co., Inc. 147
National Aluminate Corp. 76
Nordstrom Valve Div. of Rockwell Mfg. Co. ..... Inside Front Cover
Norma-Hoffmann Bearings Corp. 29
Oakite Products, Inc. 31
Oil and Gas Journal, The 178
Orbit Valve Company 136
Oshkosh Motor Truck, Inc. 52
Owen Tool Company 150
Paddock Sales of Texas 150
Paris Distributor, Inc., Henry H. 114
Parkersburg Machine Co. 150
Parkersburg Rig & Reel Co., The 35
Parsons Co., The Ralph M. 95
Peerless Pump Division of Food Machinery Corp. 140
Pelton Water Wheel Co., The 46
Penberthy Injector Co. 75, 149
Penn Electric Switch Co. 172
Perco Div. of Phillips Petroleum Co. 129
Perrault Brothers, Inc. 141
Pipeline Cleaners Co. 143
Pittsburgh Plate Glass Co., Industrial Paint Div. 32
Pittsburgh Steel Co. 12, 13
Porter Company, Inc., H. K. 58
Railway Express Agency, Air Express Division 163
Reading-Pratt & Cady Division of American Chain & Cable Co., Inc. 30
Reed Roller Bit Company 104, 105
Refinery Engineering Co., The 116
Regan Forge & Engineering Co. 161
Reilly Tar & Chemical Corp. 142
Republic National Bank of Dallas 130
Republic Steel Corporation 33
Ridge Tool Company, The 106, 178
Roebling's Sons Company, John A. 33
Ross-Martin Co. 178
Schlumberger Overseas S. A. 98
Schlumberger Well Surveying Corp. 37
Security Engineering Co., Inc. 165
Seismograph Service Corp. 156
Sheffield Steel Corp. 173
Smith Corp., A. O. 14
Smith Meter Co., Subsidiary of A. O. Smith Corp. 112, 113
Solvay Sales Div., Allied Chemical & Dye Corp. 24
Southern California Oil Tool Co. 146
Sperry-Sun Well Surveying Co. 6
Spicer Mfg. Co., Div. of Dana Corp., 37, 38
Standard Oil Co. of California 39
Standco Brake Lining Co. 150
Sterling Machinery Corp. 146
Superior Equipment Co. 167
Thompson Tool Co. 158
Tretolite Company 41
Tuboscope 121, 122
Union Pacific Railroad 40
Unit Crane and Shovel Corp. 179
United Chromium, Inc. 4
U. S. Steel Corp. Subsidiaries 48, 49
United Supply and Manufacturing Co. .. 45
Unit Rig & Equipment Company 144
Universal Oil Products Co. 78, 79
Warren Petroleum Corporation . Front Cover
Well Equipment Mfg. Corp. 168
Westinghouse Electric Corporation 26
Wheland Company, The 151
Williams & Co., J. H. 114
Williams Gauge Co., The 163
Williamson, Inc., T. D. 142
Wilson Supply Co. 124, 125
Zink Company, John 91

CALENDAR

September

Oklahoma Utilities Association, Gas Division, annual conference, Biltmore Hotel, Oklahoma City, September 17.

National Association of Corrosion Engineers, South Central section, Tulsa Hotel, September 20-21.

National Butane-Propane Association annual convention and trade exhibit, Congress Hotel, Chicago, Ill., September 20-22.

Independent Petroleum Association of America, annual meeting, Plaza Hotel, San Antonio, Tex., September 27-28.

October

American Society of Mechanical Engineers, petroleum division, Herring Hotel, Amarillo, Tex., October 3-6.

American Institute of Mining & Metallurgical Engineers, petroleum division, fall meeting, Adolphus Hotel, Dallas, October 4-6.

American Association of Petroleum Geologists, midyear meeting, technical session and 3-day field trip, William Penn Hotel, Pittsburgh, Pa., October 4-9.

American Gas Association, thirtieth annual convention, technical section, and exhibition of the Gas Appliance Manufacturers Association, Ambassador Hotel, Atlantic City, N. J., October 4-8.

California Natural Gasoline Association, twenty-fourth annual fall meeting, Ambassador Hotel, Los Angeles, Calif., October 8.

National Lubricating Grease Institute, sixteenth annual convention, Edgewater Beach Hotel, Chicago, October 11-13.

American Association of Oilwell Drilling Contractors, eighth annual meeting, Rice Hotel, Houston, October 11-13.

Texas Mid-Continent Oil and Gas Association, twenty-ninth annual meeting, Fort Worth, October 14-15.

American Institute of Mining and Metallurgical Engineers, petroleum division, Elks Club, Los Angeles, Calif., October 14-15.

Natural Gasoline Association of America, southern regional meeting, Washington-Youree Hotel, Shreveport, La., October 15.

Measurement and Control Instrument Exposition, sponsored by the Southern California Meter Association, Municipal Auditorium, Long Beach, Calif., October 22-23.

Independent Natural Gas Association of America, annual meeting, Mayo Hotel, Tulsa, October 26.

Third annual short course on "Instrumentation for the Process Industries," Texas A. & M. College, College Station, Tex., October 26-28.

November

American Society of Mechanical Engineers, fuels division, Greenbrier Hotel, White Sulphur Springs, W. Va., November 3-4.

Society of Automotive Engineers, fuels and lubricants division, Mayo Hotel, Tulsa, November 4-5.

American Petroleum Institute, annual meeting, Stevens Hotel, Chicago, November 8-11.

December

Natural Gasoline Association of America, regional meeting, Amarillo, Tex., December 3.

January 1949

Society of Automotive Engineers, annual meeting, Book-Cadillac Hotel, Detroit, Mich., January 10-14.

March 1949

New England Gas Association, Hotel Statler, Boston, March 24-25.

Western Petroleum Refiners Association, thirty-seventh annual meeting, Plaza Hotel, San Antonio, Tex., March 28-30.

American Chemical Society, division of petroleum chemistry, spring meeting, San Francisco, March 27-April 1.

April 1949

National Petroleum Association, Hotel Cleveland, Cleveland, Ohio, April 13-15.

NOMADS

Houston Nomads, second Monday of each month, The Houston Club, Houston.

Los Angeles Nomads, second Wednesday each month, Jonathan Club.

New York Nomads: Golf party, Sept. 21, at Baltusrol Country Club, N. J.

TABLE OF CONTENTS ON PAGE 59